Government of Saskatchewan

Annual Report 2003-04

Saskatchewan Environment

State of Drinking Water Quality in Saskatchewan

and the

Safe Drinking Water Strategy

Saskatchewan Centennial 2005

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Letters of transmittal

July 2003
The Honourable Dr. Lynda M. Haverstock
Lieutenant Governor of Saskatchewan

May it please Your Honour:

I respectfully submit the combined Annual Report on the State of Drinking Water Quality and the Safe Drinking Water Strategy for the fiscal year ending March 31, 2004.

Respectfully submitted,

David Forbes
Minister of Environment

The Honourable David Forbes
Minister of Environment

Dear Sir:

I respectfully submit the combined Annual Report on the State of Drinking Water Quality and the Safe Drinking Water Strategy for the fiscal year ending March 31, 2004.

The 2003-2004 report describes the drinking water related goals and objectives of departments and agencies involved in drinking water and source protection activities in Saskatchewan. Key partners in the implementation of the Safe Drinking Water Strategy include Saskatchewan Environment, Saskatchewan Health, Regional Health Authorities, Saskatchewan Watershed Authority, SaskWater, Saskatchewan Government Relations and Aboriginal Affairs and Saskatchewan Agriculture, Food and Rural Revitalization. This combined report outlines the actions taken through the Safe Drinking Water Strategy to protect and enhance drinking and source water quality and thereby the health and economic well being of Saskatchewan's citizens. The report identifies key results of water quality monitoring and key actions to deal with water quality in the future.

Saskatchewan Environment welcomes the opportunity to report on the quality of drinking water in Saskatchewan as well as the actions and accomplishments of the Safe Drinking Water Strategy over the last fiscal year. It is my hope that this document will be a useful aid in understanding how the Government of Saskatchewan has focused on attaining a sustainable, reliable, safe and clean supply of drinking water that is valued by the citizens of Saskatchewan.

Respectfully submitted,

Lily Stonehouse
Deputy Minister of Environment

104-06772/

Introduction

Safe drinking water is essential for health and well being of Saskatchewan's citizens. Safe drinking water is an integral component in the protection of public health and disease prevention. High quality water is important in maintaining natural ecosystems and the species that depend upon them, the productivity of industry, sustaining commerce and is vital in ensuring productive farms and ranches. The quality of drinking water, the condition of systems that produce it and protection of source waters are some important public health and environmental issues in Saskatchewan at the present time.

This year the report combines information on the status of drinking water, which was first reported on for the 2002-03 fiscal year, with annual reporting on the implementation of the Safe Drinking Water Strategy. The Safe Drinking Water Strategy was announced in April 2002 and forms the Government of Saskatchewan's strategic approach to improve the quality and management of drinking water in the province. Since the Strategy is intended to improve drinking water, reporting on the status of drinking water and the Strategy are being combined. Reporting in this manner will help citizens understand the steps being taken and progress towards improved drinking water in Saskatchewan.

This is the second Annual Report on the Status of Drinking Water in Saskatchewan. This report is intended to inform residents of Saskatchewan of the status of drinking water quality, waterworks infrastructure, source water protection, and water related items and measures in the province over the April 1, 2003 to March 31, 2004 period. The report is a legislated requirement under *The Environmental Management and Protection Act, 2002* and will be provided on an annual basis in future years.

The report outlines the roles, responsibilities and resources of departments and agencies involved in water management, the regulatory framework and activities undertaken by the Government off Saskatchewan to manage drinking water. The report also discusses drinking water quality monitoring, operator certification, laboratory accreditation, source protection, information management systems and public education initiatives which are key actions and indicators of performance in reaching the goals and objectives of the Safe Drinking Water Strategy. An update on progress in addressing the recommendations of the Report of the Commission of Inquiry into the City of North Battleford's drinking water is available on the Internet (http://www.SaskH2O.ca/news).

The report was built on contributions from Saskatchewan Environment; Saskatchewan Health; Saskatchewan Watershed Authority; SaskWater; Saskatchewan Government Relations and Aboriginal Affairs; Saskatchewan Agriculture, Food and Rural Revitalization; and the Municipal Financing Corporation. Saskatchewan Environment's Drinking Water Quality Section compiled the report.

The complete 2003-04 performance plan for the strategy was not published; however, reporting on planned actions and measures serves as a solid tool for communicating progress on improving the quality of drinking water. This annual report describes results for the key actions included in *Our Plan for 2003-04*, the Government-wide plan released with the 2003-04 budget, available on the Internet (http://www.gov.sk.ca/finance/budget/budget03/ourplan.pdf). This is the first time results from the Safe Drinking Water Strategy included in Our Plan 2003-04 have been published in a comprehensive manner, although the 2002-03 report on the status of drinking water in Saskatchewan did report on some the results. Improvements in the annual report are tied to continued implementation of the Government's Accountability Framework. Reporting year-end performance and financial results on both the Safe Drinking Water Strategy and the status of drinking water in Saskatchewan, increases accountability to the public. A performance plan for the Safe Drinking Water Strategy for the 2004-05 fiscal year was published on March 31, 2004, with the release of the 2004-05 provincial budget. A copy of the plan is available on the Internet (http://www.gov.sk.ca/finance/accountability/default.htm).

What is the Safe Drinking Water Strategy

The Safe Drinking Water Strategy is a comprehensive plan of action designed to deal with the risks that affect drinking water and impact the health of Saskatchewan residents. The strategy will also provide more peace of mind for citizens of the province in knowing that government is helping to ensure the water we drink is safe. The Strategy was created as one of a series of Government measures to address drinking water quality and management following the tragedy in Walkerton, Ontario where people died because of contaminated drinking water. It also responds to recommendations from the North Battleford Commission of Inquiry, which examined the waterborne Cryptosporidiosis outbreak that affected that city in 2001. The vision of the Strategy is a sustainable, reliable, safe and clean supply of drinking water that is valued by the citizens of Saskatchewan.

Several departments and agencies are involved in implementing the Strategy including Saskatchewan Environment; Saskatchewan Health; Regional Health Authorities; Saskatchewan Watershed Authority; SaskWater; Saskatchewan Government Relations and Aboriginal Affairs; and Saskatchewan Agriculture, Food and Rural Revitalization. The following is a summary of the major roles, priorities and actions of each of the government departments and agencies involved in the implementation of this Strategy.

- **Saskatchewan Environment**
  - leads ongoing planning, implementation and reporting work for the Strategy to which all participating departments and agencies contribute;
  - implementation, inspections and compliance for 554 municipal waterworks, eight pipeline, 68 large private, government and other waterworks and 617 wastewater facilities regulated under *The Water Regulations, 2002;*
  - permits for construction and operation of water and wastewater works;
  - policy, protocol, water quality standard and guideline development to support protection of drinking water and implementation of *The Water Regulations, 2002;*
  - operator certification liaison;
  - manages the drinking water information system Environmental Management System that houses water quality and inspection data for all Saskatchewan Environment regulated waterworks in the province; and
  - manages the *SaskH2O.ca* Website that supplies a broad range of drinking water related information gathered from water management authorities within the province.

- **Saskatchewan Watershed Authority**
  - source (surface/ground) water protection;
  - watershed and aquifer planning;
  - water management infrastructure; and
  - waterworks approval (except municipal).

- **Saskatchewan Health/Health Regions**
  - responsible for inspection and compliance at semi-public waterworks and certain other waterworks as required *The Health Hazard Regulations;*
  - data management systems for Public Health Inspectors and laboratory information;
  - water analysis through the Provincial Laboratory; and
  - provides advice and deals with waterborne illnesses.

- **Saskatchewan Government Relations and Aboriginal Affairs**
  - water infrastructure assistance under the Canada-Saskatchewan Infrastructure Program (CSIP) and the Northern Water and Sewer Program;
  - legislation and regulations regarding municipal protection of water sources through planning bylaws; and
  - legislation and regulations regarding pricing and capital investment policies for municipal waterworks.

- **Saskatchewan Agriculture, Food and Rural Revitalization**
  - *The Agricultural Operations Act* intensive livestock provisions;
  - *The Irrigation Act, 1996;*
  - pesticide application licenses;
  - research, demonstrations and technology transfer;
  - farm water supplies; and
  - Environmental Farm Planning (Part of the Federal/Provincial Agricultural Policy Framework).

- **SaskWater**
  - water and waste water services;
  - operation and maintenance of various water systems;
  - system assessments and audits; and
  - project management and emergency response services.

Saskatchewan Environment, Saskatchewan Health and Health Regions deliver aspects of the Strategy through a system of centralized planning, protocol and standards development and regionalized inspection and compliance services. Saskatchewan Environment maintains a staff of 31.6 Full Time Equivalent (FTE) including 19.1 FTEs for delivery of inspection and compliance activities. An additional five FTE are employed by Environment in the management of the Environmental Management System and the *SaskH2O.ca* Website. Saskatchewan Health Provincial Laboratory has 17 FTEs that are dedicated to the water testing and accreditation program as well as about 1.5 FTE support staff from other areas. Health Region Public Health Inspectors, Medical Health Officers and Public Health Nurses also play a role in water related activities (i.e. inspection of semi-public water supplies, issuance of Emergency Boil Water Orders, water borne disease investigations). To enhance inspection capacity and drinking water safety, funding in the amount of $476,000 was allocated to the Regional Health Authorities and Regional Targeted Programs and Services.

Saskatchewan Agriculture, Food and Rural Revitalization has nine FTEs which deliver intensive livestock inspection and regulatory approval services to ensure protection of water resources from intensive livestock operations. The department also develops and distributes management and technology information for conservation and grazing and crop production that reduce and/or minimize impacts to water resources. Saskatchewan Government Relations and Aboriginal Affairs' water related programming is primarily provided through centralized policy development and program delivery services.

Key partners outside the provincial government include the federal government through the Canada-Saskatchewan Infrastructure Program (CSIP), participants in the Agricultural Policy Framework, municipalities and other waterworks owners, the Saskatchewan Urban Municipalities Association, the Saskatchewan Association of Rural Municipalities, the Saskatchewan Water and Wastewater Association and the Operator Certification Board. The Saskatchewan Association of Rural Municipalities and the Saskatchewan Urban Municipalities Association were key partners during consultation on the Strategy, and continue to help in its further development and implementation. The Saskatchewan Water and Wastewater Association and the Operator Certification Board have been instrumental in advancing waterworks operator certification in the Province. The Operator Certification Board is appointed by Government, but operates at arm's length in considering the qualification and standing of water and wastewater works operators in the Province. Key stakeholders are consulted on a periodic basis to aid in the ongoing development and delivery of the Strategy.

The sections of the report that follow provide information on the status of drinking water in Saskatchewan during 2003-04. Further information on drinking water quality is available on the SaskH2O Website (http://www.SaskH2O.ca) and on Saskatchewan Environment's Website (http://www.se.gov.sk.ca). The 2002-03 Report on the Status of Drinking Water (available from http://www.SaskH2O.ca/news.asp) also provides a source of detailed background information regarding drinking water quality in Saskatchewan. The following sections also report on the key actions and the level of performance in achieving key indicators of improvement in drinking water and related protection and enhancement measures of the Strategy.

Reporting on the Strategy is one step in implementation of the Government of Saskatchewan's Accountability Framework. Transparency regarding the status of drinking water is intended to improve trust in drinking water supplies and the waterworks systems that produce it. Public reporting is intended to further the accountability of the departments and agencies that are implementing the Safe Drinking Water Strategy. Next year's annual report will address both the status of drinking water and the published 2004-05 strategic plan.

Results at a glance

Summary of Performance Results

- This section provides readers with an overview of the status of drinking water and accomplishments on key actions, performance measures and financial expenditures for the Safe Drinking Water Strategy for 2003-04.

Goal 1 - Waterworks systems and operations provide safe, clean and sustainable drinking water.

- Increased the number of certified operators at waterworks regulated by Saskatchewan Environment by 156 for a total of 582.
- The *Guidelines for Canadian Drinking Water Quality* are now in force as legally enforceable standards for new or upgraded waterworks and are being phased-in over the next five to seven years for existing waterworks regulated by Saskatchewan Environment.
- There has been a steady increase in compliance with bacteriological water quality standards (90 per cent of the time) over the past three fiscal years with a 1.7 per cent increase in compliance from 84.6 for 2002-03 to 86.3 per cent for the 2003-04 fiscal year.
- Increased compliance with the disinfection standard rose from 68.7 per cent in 2002-03 to 84 per cent in 2003-04.
- There are 25 waterworks that do not meet Saskatchewan Environment's minimum treatment requirements, a decline of 14 per cent since the previous year when there were 29 such works.
- $5.3 million was spent on 18 water and sewer projects in 15 northern communities.
- SaskWater provided technical assistance and training for 96 operators on 60 First Nations and four operators in four northern communities, as well as tutoring operators preparing for their operator certification.
- Under the Canada-Saskatchewan Infrastructure Program, 32 water supply projects and 10 wastewater projects were approved for funding for a total commitment of $ 6.4 million in federal-provincial funding.

Goal 2 - The drinking water regulatory system is clear and effective.

- Saskatchewan Environment issued 76 permits to construct, upgrade or alter waterworks. Saskatchewan Environment developed standards for assessment of potable waterworks and a program was established with the assistance of the Saskatchewan Urban Municipalities Association to organize these assessments for communities. The first assessment is due by December 31, 2005.
- Health Region public health inspectors continued to inspect public water supplies that are now regulated by *The Health Hazard Regulations, 2002*.
- Saskatchewan Environment conducted 785 waterworks inspections.
- Reporting of disinfection system upsets at water and wastewater works is now a requirement for systems regulated by Environment. The Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan Environment was revised and implemented.
- 107 Precautionary Drinking Water Advisories and 16 Emergency Boil Water Orders were issued for waterworks regulated by Saskatchewan Environment during the fiscal year. At the end of the fiscal year there were 72 Precautionary Drinking Water Advisories and three Emergency Boil Water Orders in effect at Environment regulated waterworks.
- Saskatchewan Environment finalized and implemented a Drinking Water and Wastewater Enforcement Protocol and issued 45 written warnings and 3534 verbal warnings (in relation to inspections).
- Saskatchewan Environment developed a sewage works inspection protocol and completed 311 inspections.
- Two additional laboratories received accreditation in 2003-04 by the Standards Council of Canada for analysis of drinking water samples, for a total of four accredited laboratories in Saskatchewan. Another two laboratories were awaiting confirmation of accreditation.
- Saskatchewan Environment developed and distributed guidelines and templates for Quality Assurance/Quality Control and Emergency Response Planning for waterworks and delivered workshops on these topics to aid waterworks owners complete required planning processes.

Goal 3 - High quality source waters are protected now and into the future.

- Development of source water protection plans by the Saskatchewan Watershed Authority was initiated through the formation of advisory and technical committees for the Lower Souris, Upper Assiniboine, Moose Jaw, Upper Qu'Appelle, South Saskatchewan and North Saskatchewan watersheds and the Yorkton aquifer.
- Saskatchewan Environment compiled and reviewed information on 526 wastewater discharges to determine the potential for impacts on source water. Approximately 93 wastewater systems may be a potential concern as sources of impacts on source water quality and the aquatic environment. Further inspection, assessment, discussion with sewage works owners and compliance actions will be undertaken to work towards resolving concerns with wastewater discharges.
- Saskatchewan Environment is now championing a federal-provincial-territorial process to improve wastewater management across Canada.
- Assistance was provided to landowners for the development of grazing and land-use programs to improve riparian and wetland health/condition at 1222 sites. Stewardship agreements with 42 landowners to conserve 207,645 hectares of native prairie were reached.
- Saskatchewan Agriculture, Food and Rural Revitalization provides funding through the Agriculture Development Fund for research and development of treatment and processing technologies that help to reduce the potential of contaminants leaving agricultural operations and lands.
- Government Relations and Aboriginal Affairs worked with the Saskatchewan Watershed Authority on a number of watershed plans and coordinated with the Authority representation at stakeholder meetings to provide information on implementation of watershed planning and upcoming municipal responsibilities.
- The Saskatchewan Water Quality Index has been revised and applied to sites across four major waterbodies by the end of the 2003-04 fiscal year (South Saskatchewan, North Saskatchewan, Qu'Appelle and Moose Jaw rivers). The index has also been applied to five specific locations on four other river systems in the province. Monitoring of surface water quality during the year aided in tracking water quality and development of the Index.

Goal 4 - Citizens and consumers trust and value their drinking water and the operations which produce it.

- Based on a May 2003 Omnibus poll, 61.9 per cent of people polled are willing to pay more to improve their drinking water. This value is virtually the same as December 2001 when 61 per cent of people surveyed were willing to pay more to improve their drinking water. Breaking the results of this poll down further show that 68.5 per cent of residents in Towns, Villages and Hamlets were willing to pay more, whereas 53.1 per cent of residents of Rural Municipalities were willing to pay more.
- Based on a May 2003 Omnibus poll, 87 per cent of people polled strongly or moderately agree that they are confident in the safety of their own drinking water. This value represents an increase of 15 per cent since December 2001 when 72 per cent of people surveyed were very or somewhat confident in the quality of their tap water.
- The number of waterworks owners that publicly released information to the consumers that they serve increased from 18 to 359 over the period ending March 31, 2004.
- On June 29, 2003 the "SaskH2O" Website went on line as a means to provide up to date information on drinking water quality to the public on a community specific basis.
- Based on the latest available information, consumption of water fell by 3.4 gallons per day 80.7 to 77.4 gallons per day during 2002-03.

Summary of Financial Results

- Actual expenditures relating to the strategy in 2003-04 were $23.557 million, which was $5.064 million lower than the budgeted expenditures of $28.621 million. This net variance is primarily attributable to lower than anticipated funding provided to municipalities under the Canada Saskatchewan Infrastructure Program due to project delays.
- Under the Canada-Saskatchewan Infrastructure Program (CSIP), administered by Government Relations and Aboriginal Affairs, financial support is provided to municipalities and other waterworks owners for priority drinking water and wastewater infrastructure improvements. In 2003-04, 32 water supply projects and 10 wastewater projects were approved for a total commitment of $6.4 million in federal-provincial funding. During the same year, $13.5 million of federal and provincial CSIP funding was spent on 33 water and wastewater projects approved in 2003-04 and on 45 multi-year projects approved in prior years. A listing of approved projects receiving CSIP funding is available on the Internet (http://www.SaskH2O.ca/news.asp).

2003-2004 Performance Results and the Status of Saskatchewan's Drinking Water

The following is a summary of information on the status of drinking water in Saskatchewan and progress on the goals, objectives, key actions and performance measures of the Safe Drinking Water Strategy. Further information is available by contacting Saskatchewan Environment or on the Internet (from http://www.SaskH2O.ca).

In March 2004, a 2004-05 Performance Plan for the Strategy was released and is available on the Internet (http://www.se.gov.sk.ca/environment/protection/water/2004-05PerformancePlan-DrinkingWater.pdf). Further descriptions of the performance measures are included in this document.

Goal 1 - Waterworks systems and operations provide safe, clean and sustainable drinking water

Objective 1: Waterworks staff are capable and well-trained

Provision of safe drinking water is highly reliant on the knowledge and capabilities of waterworks operators and the manner in which they apply their skills to produce and monitor the quality of drinking water. Along with source protection, sound and capable infrastructure and water quality monitoring, knowledgeable operators capable of sound waterworks operations are one of the elements of a "multi-barrier approach" to ensure safe drinking water. During 2003-04, significant progress has been made in advancing this objective. There were 1912 operator certification exams written and an additional 156 operators became certified.

Key Results

The key actions originally planned for 2003-04 shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Increase the number of certified operators at provincially regulated waterworks and wastewater works to reach 475 certified operators by the end of 2003-04. [2003-04 planned result - Environment]

  Increased the number of certified operators at waterworks regulated by Saskatchewan Environment by 130 for a total of 533. *The Water Regulations, 2002* require that all water treatment systems have a certified operator by July 2005.

  The Operator Certification Board continued to certify water and wastewater works operators throughout 2003-04. Approximately 1912 certification exams were written, with many operators taking multiple examinations. As of March 31, 2004, there were 219 waterworks licensed by Saskatchewan Environment with at least one certified operator, which included 144 waterworks that were in early compliance with operator certification standards. Although good progress has been made on advancing operator certification, Saskatchewan Environment will continue to work with municipalities, waterworks owners, the Saskatchewan Water and Wastewater Association, the Saskatchewan Urban Municipalities Association, the Saskatchewan Association of Rural Municipalities and others to advance operator certification in the future. Table 1 provides additional information on the number of communities with certified operators since 2000/01.

Table 1: Certification Summary Water and Wastewater Works (Source Saskatchewan Environment certification records database)

	2000/01	2001/02	2002/03	2003/04
Certified Operators*	44	293	403	533
Communities with Certified Operators	24	116	217	219
Communities Meeting new Standards	1	35	92	144
Per Cent Meeting new Standard	0.2%	5.7%	15%	23%
Number of licensed works**	609	609	617	630

* Operators working in Saskatchewan Environment regulated waterworks.

**Licensed works includes water treatment works, water distribution systems, wastewater treatment works and wastewater collection systems.

Table 2 provides information on the number of operators certified at various levels in all categories of the water and wastewater treatment industry in Saskatchewan during 2003-04.

Table 2: Distribution of Certified Operators at Water and Wastewater Works - Fiscal Year 2003-04

System Classification	Water Treatment	Water Distribution	Wastewater Treatment	Wastewater Collection
Small System[1]	61[2]	66	33	33
Class-1	184	223	161	141
Class-2	112	103	25	51
Class-3	37	7	14	5
Class-4	13	1	10	1
Total	407	400	243	231

Source: Saskatchewan Environment certification records database

[1] There are two types of Small Systems. A Small Water System is defined as a Class-1 groundwater treatment and/or Class-1 distribution system, serving fewer than 500 people. A Small Wastewater System is a Class-1 wastewater treatment system (generally a lagoon system) and/or a Class-1 collection system serving fewer than 500 people.

[2] Of the Small Water System operators, there are 17 that each operate a number of Small Water Systems within the provincial parks.

A summary of communities with Certified Operators, System Classification and Operator Classification as of March 31, 2004 is available on the Internet (www.SaskH2O.ca/foroperators.asp).

- Begin to implement continuing education requirements for waterworks operators. [2003-04 planned result - Environment]

  Effective July 15, 2005, *The Water Regulations, 2002* require that waterworks operators obtain additional training annually in order to maintain their certification status.

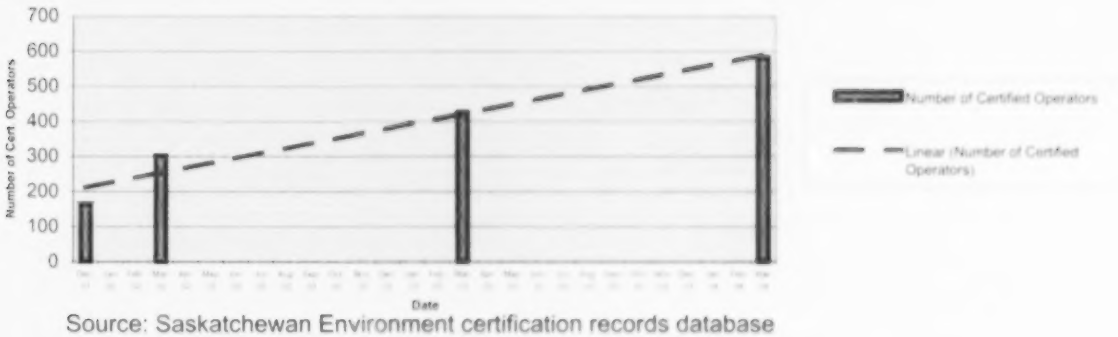
  Information was provided to waterworks owners and operators through updates to the "Drinking Water Information Binder" and during 12 workshops held on regulatory requirements. Additionally, Saskatchewan Environment continued to work with educators to further develop learning opportunities and provided support to the Saskatchewan Water and Wastewater Association for three emergency response planning workshops, two sewage lagoon workshops, one math workshop and the association general meeting held in the province during 2003-04.

- Enhance operator training regulations requiring that all operators working at provincially regulated waterworks be certified by 2010. [2003-04 planned result - Environment]

  No direct progress on above noted key action beyond initial consultation and discussion during the 2003-04 fiscal year. During the 2004-05 fiscal year, Saskatchewan Environment will initiate plans to further extend operator certification beyond a single certified operator at each regulated human consumptive waterworks. Plans include a review of progress of operator certification and reactivation of the Certification Advisory Committee that was integral to the development of operator certification requirements that were first introduced in July 2000. This initiative will be of greatest help ensuring that villages, towns and cities with larger waterworks with more than a single operator have reserve capacity to ensure ongoing operation of the works. Certification of all waterworks operators to some degree will also help further ensure the provision of safe drinking water.

Measurement Results
Number of certified operators.

Figure 1: Summary of Certified Operator Trends



Source: Saskatchewan Environment certification records database

During 2003-04 the number of all certified operators reported by the Operator Certification Board rose to 582 as of March 31, 2004. This is an increase of 156 over the previous year and measures all certified operators, including those that do not operate waterworks regulated by Saskatchewan Environment. There has been a steady increase in the number of certified operators since the introduction of certification requirements in July 2000 that shows the success of operator certification efforts to date. The target of having 475 operators certified by the end of the fiscal year was exceeded as a result of interaction with waterworks operators and owners through inspection and related activities. In 2004-05, changes are being made to create a self-funding system to support administration of operator examinations. These changes may affect the rate at which operators are certified in 2004-05 and beyond.

Objective 2: Infrastructure produces water that meets the National Drinking Water Quality Guidelines

Infrastructure design, capability, condition and maintenance are critical in the production of safe drinking water. Standards, incentives, requirements, compliance measures and implementation plans must also be in place to ensure that waterworks are operated and monitored to achieve drinking water of a quality that protects human health. The National Drinking Water Quality Guidelines (see: http://www.hc-sc.gc.ca/hecs-sesc/water/dwgsup.htm) are used in Canada as the definitive measure of science based safety criteria for drinking water. Saskatchewan has now adopted the guidelines as standards (see: http://www.se.gov.sk.ca./environment/protection/water/Drinking_Water_Standards_post.pdf).

During 2003-04, significant progress has been made in advancing this objective. Water quality standards are being phased-in at existing waterworks and are in full effect at new waterworks. Compliance with bacteriological drinking water quality standards is high having increased to 86.3 per cent. Compliance with the disinfection standard is also high having increased by 15.3 per cent to 84 per cent in 2003-04. The number of waterworks not meeting minimum water treatment requirements decreased by 14 per cent to 25 from 29 waterworks. In cases where compliance is not attained, Saskatchewan Environment follows up through the use of inspections, Precautionary Drinking Water Advisories or warnings as a means to help improve water quality and protect consumers. There was $5.3 million spent on water and sewer systems in 15 northern communities. Under the Canada-Saskatchewan Infrastructure Program, 32 water supply projects and 10 wastewater projects were approved for funding for a total commitment of $6.4 million in federal-provincial funding.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Implement new, legally enforceable standards for key water quality parameters (bacteriological and turbidity). [2003-04 planned result - Environment]

  Included standards for bacteriological, turbidity and other key water quality parameters in *The Water Regulations, 2002*. Bacteriological standards took effect immediately; a four to six year phase-in period is in place to allow upgrades required to meet turbidity standards.

  In terms of the status of drinking water in Saskatchewan, the bacteriological quality of water is important since when the drinking water standards are exceeded, there is a possibility of significant health effects for water consumers. Implementation of water quality standards is achieved through permitting, inspection and follow-up on monitoring results. Saskatchewan uses coliform bacteria as an indicator of the quality of drinking water. Saskatchewan's standards for bacteriological drinking water quality are more stringent than the Guidelines for Canadian Drinking Water Quality. The number of samples required for bacteriological water quality monitoring of a waterworks is based on the number of people served by the system (see: Municipal Drinking Water Quality Monitoring Guidelines at http://www.SaskH2O.ca/foroperators.asp). When a routine water sample shows the presence of bacteria, follow-up activities including repeat sampling are performed. Saskatchewan Environment issued 11 Precautionary Drinking Water Advisories during 2003-04 when bacteriological related problems arose at waterworks.

  During 2003-04 there were 23,165 valid routine bacteriological water quality samples submitted of which 799 samples (3.45 per cent) exceeded the water quality standards of zero total coliforms, zero fecal coliforms or greater than 200 background bacteria per 100 millilitres of water. During 2003-04, a total 23,165 of 23,061 (100.45 per cent) of the required regular samples for bacteriological water quality were submitted from waterworks regulated by Saskatchewan Environment. This is an increase from 2002-03 when total sample submission compliance was 99.8 per cent. The slight increase in total sample submission resulted from 184 facilities submitting more than 100 per cent of required samples during 2003-04.

  There were 346 waterworks in the province that exceeded the bacteriological standards at least one time during 2003-04. During the same time period there were six waterworks that had more than 50 per cent of their routine bacteriological water samples show the presence of bacteria (Candiac, Gronlid, Meadow Lake Provincial Park Greig Lake Campground, Osage, Palmer and Wood Mountain). Another 13 locations had between 25 and 50 per cent of their routine samples exceed the bacteriological water quality standards (Aylesbury, Fairy Glen, Hagen, McCord, Meota, Mistatim, Morse, Palliser Regional Park Trailer Court, Senlac, Shell Lake, Smiley, Tobin Lake and Tuffnell). A total of 86 regulated

  waterworks had greater than 10 percent of their regular bacteriological samples test positive during the year. See Figure 3 for more information on the performance of waterworks regulated by Saskatchewan Environment in meeting bacteriological water quality standards.

  Turbidity is a measure of the "cloudiness" of water and is an indirect measure of the number of suspended particles in water. Turbidity is a good indicator of the effectiveness of a water treatment system and is important because turbid water can harbor disease-causing organisms. Turbidity monitoring of Saskatchewan Environment regulated waterworks is required at least on a daily basis as a means to track water treatment system performance.

  Saskatchewan Environment now has stringent standards for turbidity. These standards are being phased-in for existing

waterworks and take effect upon the start-up of any new waterworks. During phase-in of the turbidity standards, in 2003-04 the department generally applied a turbidity standard of 1.0 Nephelometric Turbidity Units (NTU) for existing waterworks. During the 2003-04 fiscal year, municipalities were not required to submit routine turbidity monitoring results. However, on-site monitoring for turbidity and record keeping is required and these records are checked during site inspections by Environmental Project Officers. During 2003-04, Environment staff focused efforts on helping waterworks owners and operators to track turbidity monitoring results and manage turbidity related water quality problems. There were 20 Precautionary Drinking Water Advisories issued during 2003-04 when turbidity related problems arose at waterworks. Turbidity testing results are being reported in conjunction with information submitted with regular bacteriological samples.

The range of turbidity results tested by all agencies in 2003-04 (municipal, private and government owners) is shown in Table 3.

Disinfection of drinking water is one of the key methods to prevent the spread of waterborne disease. Most disinfection of drinking water in the province is performed using chlorine-based products. Waterworks regulated by Saskatchewan Environment are required to maintain:

(a) a free chlorine residual of not less than 0.1 milligrams per Litre (mg/L) in the water entering a distribution system; and
(b) a total chlorine residual of not less than 0.5 mg/L or a free chlorine residual of not less than 0.1 mg/L in the water throughout the distribution system.

Table 3: Range of Turbidity Testing Results

Turbidity Range (NTUs)	Samples	Per Cent Samples	Systems
0 1	11,292	84.08 %	481
1 2	1,394	10.38 %	194
2 3	389	2.9 %	98
3 4	157	1.17 %	57
4 5	96	0.71 %	40
5+	102	0.76 %	32
Totals	**13.430**	**100 %**	**511**

Chlorine disinfectant monitoring usually includes two tests: total chlorine residual and free chlorine residual. Free chlorine residual in drinking water is important in providing lasting protection in water distribution systems. Total chlorine residual is helpful for waterworks operators to understand the effectiveness of disinfection and to judge cleanliness of the water distribution system. On-site monitoring for chlorine residual and associated record keeping is required and these records are checked during site inspections by Saskatchewan Environment's Environmental Project Officers. During 2003-04, staff continued to emphasize the need for waterworks operators to monitor and track chlorine residual as a means to help ensure water quality. During 2003-04, Saskatchewan Environment issued nine Precautionary Drinking Water Advisories as a result of a lack of chlorination at waterworks. Chlorine residual testing is performed and reported in conjunction with information submitted with regular bacteriological samples and is reported below.

Chlorine residual test results are reported in conjunction with information submitted with regular bacteriological samples. These measurements are taken at the same location as for bacteriological sampling and represent chlorine residuals in the distribution system. As previously noted, a total chlorine residual of not less than 0.5 mg/L or a free chlorine

residual of not less than 0.1 mg/L must be maintained in the water throughout the distribution system. During 2003-04, 529 out of 630 regulated waterworks reported distribution system free or total chlorine residuals within regulatory limits 90 per cent of the time for an overall reported compliance rate of 84 per cent. See Figure 4 for more information on the performance of waterworks regulated by Saskatchewan Environment in meeting disinfectant level requirements.

Saskatchewan Health and Health Regions are in the process of fully implementing a data management system which will capture water quality information in the future. Health and Health Regions will be in a better position to provide information next year.

- Employ Guidelines for Canadian Drinking Water Quality as conditions for waterworks licenses. [2003-04 planned result - Environment]

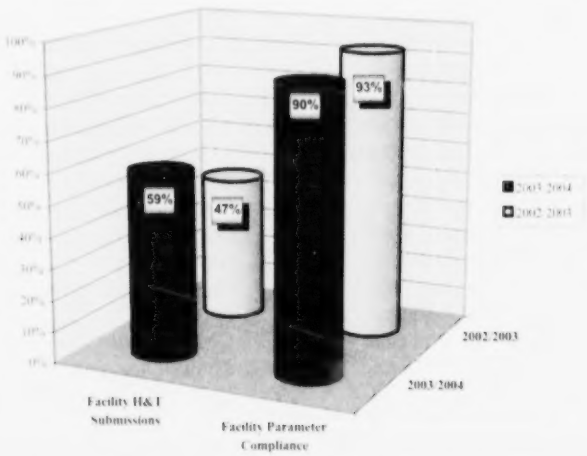
  Used the Guidelines for Canadian Drinking Water Quality as the basis for legally enforceable standards in *The Water Regulations, 2002*. These standards are also being cited as enforceable waterworks conditions in all new and altered permits.

Most existing permits were reviewed and revised during 2003-04 to reflect new standards for water quality at all Environment regulated waterworks. These standards are being phased-in over the next five to seven years for existing waterworks and take effect upon the start-up of any new waterworks.

In terms of the status of drinking water in Saskatchewan, the "health and toxicity" water quality parameters include a range of naturally occurring substances (i.e. Arsenic, Boron, Fluoride, Selenium, Uranium, etc) and other substances such as trihalomethanes, which may be produced during chlorine based disinfection processes. These substances may represent a very small potential for adverse health effects to consumers over longer time periods. A complete listing of the health and toxicity substances monitored at Saskatchewan Environment regulated waterworks is available at http://www.SaskH2O.ca/foroperators.asp (see Municipal Drinking Water Quality Monitoring Guidelines). Implementation of these water quality standards is achieved through permitting, inspection and follow-up on monitoring results.

Figure 2: Health and Toxicity Facility Submission and Parameter Result Compliance

Arsenic 3
Boron 0
Cadmium 0
Chromium. 0
Copper 0
Fluoride 80
Lead 0
Nitrate. 13
Selenium 2
Uranium 10



Source: Saskatchewan Environment Environmental Management System database

In 2003-04, there were 28 facilities that exceeded at least one health and toxicity related chemical standard resulting in a total of 108 exceedances.

During the 2003-04 fiscal year, 59 per cent of Saskatchewan Environment licensed waterworks submitted the required Heath and Toxicity samples. Ninety per cent of these waterworks met the drinking water quality objectives for health and toxicity related chemicals. Figure 2 shows these results and compares to the results for last year.

The present standard for Trihalomethanes now being phased-in at existing waterworks is 100 parts per billion based on an average of four seasonal samples. Saskatchewan Environment is presently examining the need to revise this water quality standard to a more stringent value.

A total of 182 surface water treatment and delivery facilities were required to participate in the Trihalomethane monitoring program during the 2003-04 fiscal year, which should result in 797 samples being submitted each year. The actual number of regulated waterworks that submitted samples was 163 (89.6 per cent). A total of 600 samples (75.3 per cent overall compliance) were submitted by the facilities. During 2003-04, 115 regulated waterworks (63 per cent) submitted 314 samples for analysis that met the maximum acceptable concentration for Trihalomethanes in drinking water. During 2003-04, 85 regulated waterworks (46.7 per cent) produced water that met the Trihalomethane objective of 100 ug/L based on the annual average of seasonal sampling.

- Work with small communities to develop effective solutions for provision and management of drinking water supplies. [2003-04 planned result - SaskWater]

Assisted community clients in determining a water price and water utility budget based on commerciality, where Water Rate = Capital + Operating Cost. In addition, the need to ensure long-term utility sustainability is emphasized in all cases.

SaskWater launched Certified Operations and Maintenance as a new line of business late in 2002.

SaskWater partners with communities to provide certified operations and maintenance of their water and wastewater utilities, including water supply, treatment, storage, distribution and wastewater treatment and disposal. SaskWater also provides customer and regulatory reporting, 24/7 continuous monitoring, emergency planning and customer support services. SaskWater works with customers to determine an appropriate level of service depending on the existing infrastructure and the customer's needs. All services are supervised or performed by certified operators.

In 2003, SaskWater owned and operated six water treatment plants (Gravelbourg, Edenwold, Pierceland and White City) including two large plants that produce water for regional systems in central Saskatchewan. During the year, SaskWater made 152 contacts with municipal, industrial and community clients. New SaskWater treated water supply customers include Cudworth, Star City, Star City Colony and White City. Star City and Star City Colony are supplied by means of an expansion of SaskWater's Melfort regional water supply system. Cudworth is supplied with treated water from SaskWater's Wakaw-Humboldt Regional Water Supply System. In addition, SaskWater's new customers include four new Certified Operations and Management clients: Paynton, Halbrite, White City and Star City.

SaskWater also undertakes work for Indian and Northern Affairs Canada in northern Saskatchewan, providing technical assistance and training for 96 operators on 60 First Nations and four operators in four northern communities, as well as tutoring operators preparing for their operator certification.

- Under the Northern Water and Sewer Program, $4.9 million will be spent on 24 projects for 18 communities. [2003-04 planned result - Government Relations and Aboriginal Affairs]

The Northern Water and Sewer Program is a four-year $24.9 million program that was established in 2000 to upgrade water and sewer systems in 35 communities in northern Saskatchewan. Funding to the program comes from the CSIP, the Centenary Fund, the Northern Revenue Sharing Trust Account,

Indian and Northern Affairs Canada and municipalities. In 2003-04, about $5.3 million was spent on 18 water and sewer projects in 15 northern communities. Also, about $395,000 was spent under the Emergency Repair Program on 18 water and sewer projects in 14 northern communities. Values reported here are actual expenditures compared with the previous mid year report which mentioned available funding. A list of the communities funded under the Northern Water and Sewer Program and the Northern Emergency Repair Program are provided on the Internet (http://www.SaskH2O.ca/news.asp).

- Provide funding under CSIP to municipal water and sewer systems. [2003-04 planned result - Government Relations and Aboriginal Affairs]

  The CSIP is a five-year federal-provincial program that was put in place in 2001 to provide infrastructure funding to municipalities. Funding water and sewer projects is a priority under the program. In 2003-04, 32 water supply projects and 10 wastewater projects were approved for funding for a total commitment of $ 6.4 million in federal-provincial funding. All communities with drinking water advisories or boil water orders due to infrastructure problems that applied for funding and met the application deadlines were approved for CSIP funding, except for a couple of very expensive projects. In the case of very expensive individual projects, communities are being encouraged to seek more cost effective regional solutions. A list of the CSIP water and sewer projects approved for funding in 2003-04 are provided on the Internet (http://www.SaskH2O.ca/news.asp). Also, in 2003-04, $13.5 million of federal and provincial funding was spent under the CSIP on 33 water and wastewater projects approved in 2003-04 and on 45 multi-year projects approved in prior years.

- Through the Municipal Financing Corporation, municipalities can access financing to upgrade waterworks or related infrastructure. [2003-04 planned result - Finance]

  Provided financing of $497,300 through the Municipal Financing Corporation to upgrade waterworks and related infrastructure at the Resort Village of Manitou Beach. The Municipal Financing Corporation will continue to offer financing for utility upgrades in future years.

- Repair and upgrade 16 water control structures throughout the province, and undertake inspections and preparatory work for a further eight projects at a cost of $3.7 million. [2003-04 planned result - Saskatchewan Watershed Authority]

  In 2003-04, $836,600 was spent on the investigation and design of rehabilitation needs for 28 projects within the Authority's complement of water management infrastructure. Over 85 per cent of this expenditure was devoted to the following eight projects: Avonlea Dam, Hugonard Dam, Cowan Lake Control Structure, Pike Lake pumping and storage works, Katepwa Lake Outlet Structure, Wascana Weir, Lac La Ronge Control Structure and the Upper Qu'Appelle River Conveyance Project.

  During the year $2,546,600 was expended to initiate or complete rehabilitation at a number of the Authority's water management facilities. Work undertaken at the following 11 projects accounted for over 96 per cent of this expenditure: Alameda Dam, Avonlea Dam, Bradwell East Dam, Cowan Lake Control Structure, Emma Lake Diversion Canal, Gardiner Dam, Lac La Plonge Dam, Makwa Lake Control Structure, Scott Dam, Stelcam Weir and Wascana Weir. Work under two contracts (Avonlea Dam and Cowan Lake Control Structure) was not completed prior to fall freeze-up and were carried over to 2004-05.

- Require municipalities to submit with CSIP applications: pricing and investment strategy information; assurances that water quality guidelines will be met by the proposed projects, and; a commitment to retaining the services of a certified water systems operator on completion of projects that are funded by CSIP. [2003-04 planned result - Government Relations and Aboriginal Affairs]

  In 2003, Saskatchewan Government Relations and Aboriginal Affairs negotiated with Saskatchewan Urban Municipalities Association and Saskatchewan Association of Rural Municipalities to require capital

investment plans for water and wastewater works starting with applications in 2004-05. Beginning in 2003-04, CSIP grant payments are paid out to municipalities when Environment licenses the system, which it will do if the improvements funded by CSIP meet the water quality requirements and the municipality commits to employing a certified operator.

In addition to progress made on planned actions, other key accomplishments included:

In 2003, SaskWater provided project management services to 34 of the 35 communities in the Northern Administration District. SaskWater plays a key role in planning and managing the design and construction of water and wastewater infrastructure. SaskWater signed an agreement with the Northern Revenue Sharing Trust Account Management Board (NRSTAMB) to provide program management of what has become a six-year $35 million initiative to construct and upgrade the water and wastewater infrastructure in Saskatchewan's 35 northern communities.

SaskWater services include managing the program budget, technical advice for conceptual and feasibility studies, project management during the design and construction of facilities, and assistance with start-up and operation. In 2003, SaskWater also responded to 15 water quality and system emergencies in the northern communities on behalf of the NRSTAMB. The work ranged from thawing and repairing frozen water mains in Weyakwin, Michel Village and Beauval to providing solutions to water quality issues creating a boiled water order at Jans Bay and to power surges knocking out the sewage pump station and water treatment plant controls in Patuanak and Sandy Bay.

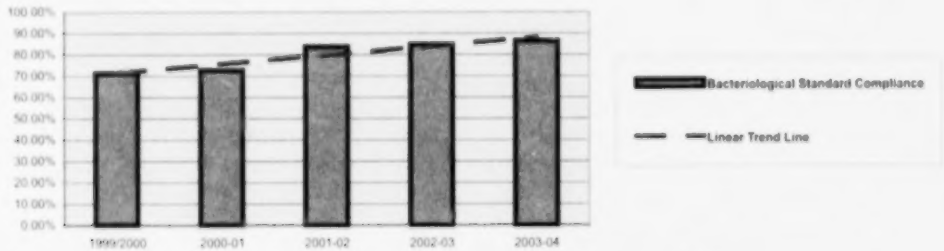
SaskWater also provided project management for the design and construction of subdivision lots on behalf of the NRSTAMB. Work included the construction of sewer and water mains, streets, telephone and power for 24 lots in Pinehouse and a 35-lot subdivision in Ile-a-la-Crosse.

In addition to the emergency and subdivision projects, SaskWater managed 26 water and sewer construction projects worth $5.8M in 20 northern communities. These projects included a new water supply and treatment system for Bear Creek, a new water booster station in Creighton, well construction and servicing in St. George's Hill, and expansion of the Pinehouse sewage lagoon. SaskWater's role of providing project management and general technical advice to northern communities, backed by 20 years of experience in northern engineering, is central to the success of the northern program.

Measurement Results

Per cent of facilities that meet bacteriological guidelines 90 per cent of the time.

Figure 3: Bacteriological Standards Compliance

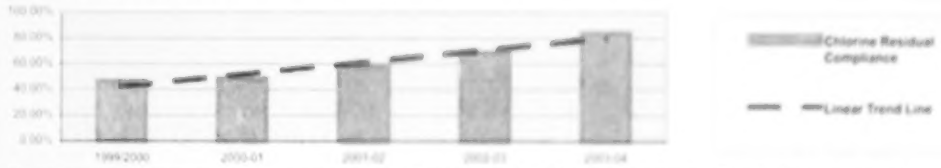


Source: Saskatchewan Environment Environmental Management System database

There has been a steady increase in compliance with bacteriological water quality standards (90 per cent of the time) over the past three fiscal years with a 1.7 per cent increase in compliance from 84.6 for 2002-03 to 86.3 per cent for the 2003-04 fiscal year. The steady increase in compliance with standards is the result of increased inspection and follow-up on water quality sampling results by Saskatchewan Environment staff as well as increased attention to water treatment and monitoring by waterworks owners and operators. Ongoing inspection and interaction with waterworks owners and operators is planned to maintain good performance.

Per cent of waterworks [regulated by Saskatchewan Environment] that meet disinfection requirements 90 per cent of the time.

Figure 4: Disinfection Standard Compliance

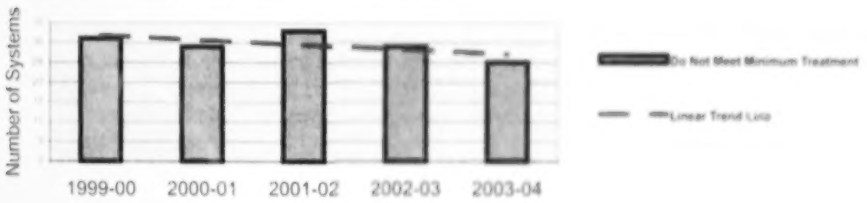


Source: Saskatchewan Environment Environmental Management System database

There has been a significant increase in compliance with the disinfection standards over the past fiscal year with a 15.3 per cent increase in compliance from 68.7 per cent in 2002-03 to 84 per cent in 2003-04. The increase in compliance with the disinfection standards can be directly attributed to an increased field presence by Saskatchewan Environment inspection staff and a renewed awareness by waterworks owners and operators of the regulatory requirements. Ongoing inspection and interaction with waterworks owners and operators is planned to maintain good performance.

Number of waterworks that do not meet Saskatchewan Environment's minimum treatment requirements.

Figure 5: Number of Waterworks Regulated by Saskatchewan Environment that do not Meet Minimum Treatment Requirements



Source: Saskatchewan Environment Environmental Management System database

As of March 31, 2004, there are a net of 25 waterworks that do not meet Saskatchewan Environment's minimum treatment requirements, a decline of 14 per cent since the previous year when there were 29 such works. The decrease is the result of Saskatchewan Environment's educational and compliance related efforts as well as funding provided through the CSIP to upgrade works. Saskatchewan Environment's educational and compliance efforts will continue as will the CSIP funding during 2004-05.

All waterworks regulated by Saskatchewan Environment and not meeting minimum treatment requirements are placed on Precautionary Drinking Water Advisories as a means to protect consumers. The department also provides technical advise to communities not meeting minimum treatment requirements to aid waterworks owners to work towards system improvements.

Eight waterworks listed in last years' report were removed from the list of works that do not meet minimum treatment requirements. The works removed are Beaubier, Broderick, Candiac, Congress, Goodsoil, Leader, Riverhurst and St. Victor. Four additional waterworks were added during the reporting period and include Lac Pelletier Regional Park Darling's Beach, McCord, Spring Valley and Thompson Lake Regional Park.

Objective 3: Waterworks systems and operations are financially sustainable

Ensuring the financial sustainability of waterworks is critical in the production of safe drinking water over the long-term. Waterworks deteriorate over time and may need to be expanded or replaced. Municipalities will therefore need to know the condition of their waterworks and put in place pricing and capital investment policies for these systems. Public transparency will aid in ensuring that waterworks systems are sustainable into the future.

During 2003-04, progress has been made in developing the regulations that will support this objective. Work began on new regulations that will require municipalities to establish and report on pricing and capital investment policies for their waterworks.

Key Results

The key action originally planned for 2003-04 is shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Establish regulations that will require municipalities to put in place rate and capital investment policies for their water utilities by January 1, 2005 and to publicly report on these policies by July 1, 2005 [2003-04 planned result - Government Relations and Aboriginal Affairs]

  Amendments to *The Rural Municipality Act, 1989, The Urban Municipality Act, 1984, The Northern Municipalities Act* and *The Cities Act* were passed in the 2002 Legislative Session and provide regulation making powers to require municipalities to establish and report on pricing and capital investment policies for their utilities. During 2003-04, work began on regulations which are to be completed during the 2004-05 fiscal year that will require municipalities to establish pricing and capital investment policies for their waterworks and publicly report on them and related key financial information. This information will assist ratepayers' understanding of municipal waterworks and help them determine if they are satisfied with the policies. These new regulations are planned to come in effect July 1, 2006 to coordinate with the independent waterworks system assessments required under *The Water Regulations, 2002*.

Measurement Results

Number of municipalities with pricing and capital investment policies in place for their waterworks.

This measure was established to gauge compliance with legislative amendments that are planned to become effective in 2006 that would require municipalities to put in place pricing and capital and investment policies in place for their waterworks. Since the measure is aimed at a future event we are unable to report results for the 2003-04 fiscal year or provide trend information for this measure. Presently less than five per cent of municipalities have pricing and capital investment strategies in place for their waterworks.

Goal 2 - The drinking water regulatory system is clear and effective

Objective 1: Regulations are clear and ensure that health and drinking water quality will be protected

Provision of safe drinking water is reliant on regulatory requirements that are clear and communicated to owners and operators of waterworks. Additionally, accepted standards and practices are required to ensure requirements are achieved in the proper manner. Program delivery and related policies are necessary to track and ensure that regulatory requirements are being met. Collectively, these measures will help to ensure that drinking water is safe and that wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment.

During 2003-04, significant progress has been made in advancing this objective. Inspection protocols are now in place and Saskatchewan Environment conducted 785 waterworks inspections at which time information on new regulatory requirements was provided directly. Protocols for pipeline inspection, sewage works inspection and compliance and enforcement at Saskatchewan Environment regulated waterworks were also developed and implemented. A follow-up protocol for dealing with bacteriological water quality problems was also revised, implemented and publicized by Saskatchewan Environment, Saskatchewan Health and Health Regions.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Deliver timely review, approval and licensing of waterworks. [2003-04 planned result - Environment and SaskWater]

  Protocols for permitting of waterworks have been developed and are now being used by Saskatchewan Environment staff. Permits to construct are issued by department engineering staff and operational permits are issued by Environmental Project Officers who inspect waterworks or deal with owners or operators on a frequent basis.

  During 2003-04 Saskatchewan Environment issued 76 permits to construct, upgrade or alter waterworks. Investment in infrastructure for these improvements totaled $35.6 Million. A summary of waterworks construction permits issued during the 2003-04 fiscal year is available on the Internet (http://www.saskh20.ca/news.asp)

- Mandate an independent assessment of all waterworks once every five years. [2003-04 planned result - Environment]

  A fact sheet, which outlines the content of waterworks assessments was developed and distributed to waterworks owners. Independent assessment of Saskatchewan Environment waterworks once every five years is a regulatory requirement. The Saskatchewan Urban Municipalities Association and SaskWater established a program to facilitate assessment of waterworks by consulting engineers in the Province. Assessments of waterworks under the program began late in the fiscal year. The assessments will also support the development of pricing and capital investment policies to aid in ensuring waterworks are financially sustainable.

- Regulate semi-public water systems through *The Health Hazard Regulations*. [2003-04 planned result - Health and Regional Health Authorities]

  During the reporting period Health Region public health inspectors continued to inspect public water supplies that are now regulated by *The Health Hazard Regulations, 2002*. These regulations apply to semi-public water supplies (e.g. Rural Municipal Wells, tourist accommodations and small campgrounds) that were not previously regulated. Many of these systems are seasonal and operate only during the summer season.

  The regulations, which are administered by the Health Regions, include provisions that require the:

  - Health Region to approve any public

water supply that is established, extended, renovated or altered after December 5, 2002;

- owner and or operator of a public water supply to:
  - ensure the water is potable at point of delivery;
  - locate, construct and operate the supply to reduce the potential of contamination of the source; and
  - to prevent the contamination of water within the distribution system;
- treatment of water, when required by the Health Region, to ensure the water that is delivered for use is potable;
- submission of water samples, to an approved laboratory, for bacteriological and major ion analysis as well as any other analysis that the Health Region may require;
- immediate reporting to the Health Region of laboratory test results that indicate the presence of total coliforms, *E.coli* or fecal coliforms; and
- immediate reporting to the Health Region of any matter that may affect the safety of the public water supply.

Information from the inspections of the Health regulated public water supplies will be entered into a data management system, Public Health Inspector Management System that is used by Health Region public health inspectors during their activities in other public health program areas. The system will connect with the Provincial Laboratory Information System and will enable linkages of water test results specific to the Health regulated public water supplies. In addition, the system will capture information relating to water source type, system size, treatment, tests and compliance with *The Health Hazard Regulations*.

The Public Health Inspector Management System was implemented in early 2004 however the Laboratory Information Management System is not yet completed. Both systems are expected to be fully implemented by end of 2004.

- Creation of Northern water labs that will be located in Hospital/Medical Centers to test water samples from northern public and semi-public water supplies. [2003-04 planned result - Health]

Currently the Provincial Laboratory, Saskatchewan Health, provides the majority of water quality analysis for regulated water systems. To ensure accurate and timely testing of bacteriological parameters, samples should be transported in coolers and processed within 48 hours of collection. For some isolated northern communities and seasonal operations this poses some practical difficulties and there will be on-going evaluation of packaging and transportation which will be re-assessed during 2004-05.

- Increase levels of monitoring, inspection and testing for provincially regulated water systems to a level of two inspections per year at all surface water systems and groundwater systems serving more than 500 people. All other waterworks and wastewater works will be inspected once each year. [2003-04 planned result - Environment]

Saskatchewan Environment has implemented a heightened inspection program on all waterworks facilities regulated by the department. A Drinking Water Inspection Protocol is in effect and is used to guide inspection activities at waterworks.

During 2003-04, a pipeline inspection protocol was also developed for newly regulated pipeline systems and will be implemented during 2004-05. Waterworks inspections are carried out by the Environmental Project Officers.

The inspection protocol called for a minimum of one inspection per fiscal year on municipal waterworks which use groundwater (two inspections per year if the population is greater than 500 or if high risk is identified for a groundwater based supply) and two inspections per fiscal year on the municipal waterworks using surface water sources. All other waterworks facilities regulated by Saskatchewan Environment (including large private works, pipelines, industry, government and other waterworks) shall be inspected once each fiscal year. During a three-year cycle, at least one inspection will be unannounced. Information on the content of waterworks inspections is available from the 2002-03 State of Drinking Water Report. There were 785 inspections completed in this fiscal year; 785 inspections were required based on the number of waterworks and

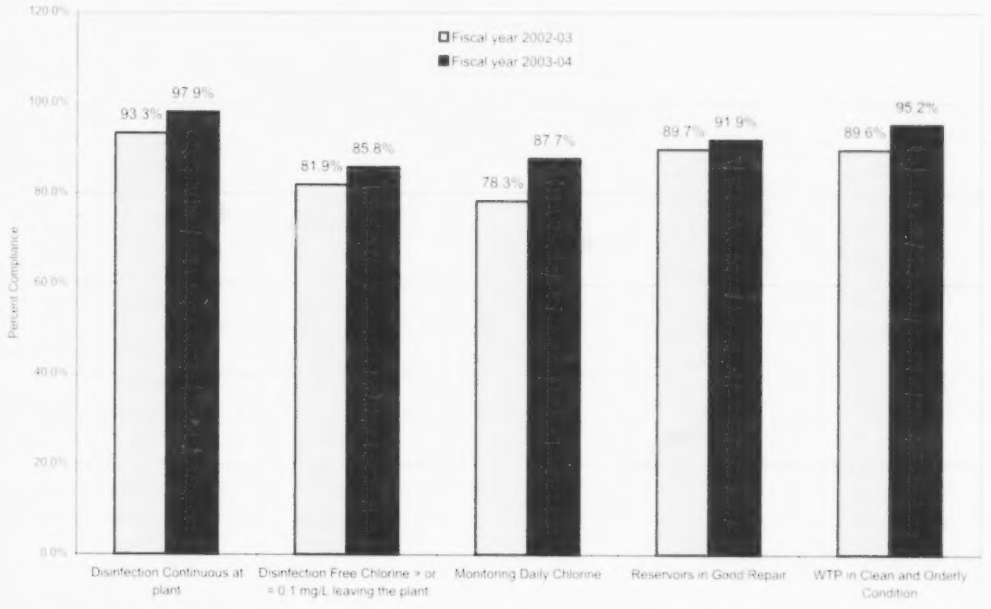
inspection frequency established by Saskatchewan Environment. Table 4 summarizes the findings of key elements for inspections conducted during the 2003-04 fiscal year. Figure 6 shows how compliance has increased for each of the five inspection elements reported for 2003-2004 and 2002-2003.

Table 4: Waterworks Inspection Finding Summary.

Inspection Element	Non-Compliant Compliant	N/A or No Response	Compliant
Disinfection Continuous at plant	17	10	758
Disinfection Free Chlorine > or = 0.1 mg/L leaving the plant	97	24	664
Monitoring Daily Chlorine	101	5	679
Reservoirs in Good Repair	27	47	711
WTP in Clean and Orderly Condition	30	18	737
A total chlorine residual not <0.5 mg/l or a free chlorine residual not <0.1 mg/l in the distribution system	125	4	656
Bacteriological testing after completion, alteration, extension or repair	64	24	697
Reporting of Chlorine Upsets	93	24	668
Record Keeping	449	2	334

Source: Saskatchewan Environment Environmental Management System database

Figure 6: Compliance Rate changes



Source: Saskatchewan Environment Environmental Management System database

- Implement requirements for waterworks upset reporting (for incidents such as equipment failures or operational problems affecting water quality) and reporting of low disinfectant levels to provide for greater consumer safety. [2003-04 planned result - Environment]

  Reporting of operational or disinfection system upsets at water and wastewater works is now a requirement for systems regulated by Saskatchewan Environment. Upset reporting is important to help ensure that problems which occur due to equipment failures or changes in source water quality are properly managed and that the health of consumers can be protected. During 2003-04 a fact sheet was developed and distributed to waterworks owners and operators that outlines the typical situations where upset reporting is required. Waterworks inspections include checks for unreported upsets and a review of routine water quality monitoring results to determine if proper disinfection levels are maintained. When upsets at waterworks are reported, Saskatchewan Environment staff work with waterworks operators and owners to aid them to address and resolve problems. During 2003-2004 inspectors detected two instances of failure to report process upsets at waterworks. In both cases, verbal warnings were issued.

- Finalize protocols for positive bacteriological test reporting. [2003-04 planned result - Environment]

  Revised the Bacteriological Follow-up Protocol for Waterworks Regulated by Saskatchewan Environment. Several revisions were completed to clarify the steps to be taken to report and resolve bacteriological water quality problems detected through routine water quality monitoring or resulting from upsets at waterworks. The largest change to the document was the addition of a new communications protocol to serve as a quick reference and aid in the processof public notification of water quality problems. Procedures and templates were added to speed the process of notifying the public through media outlets as well as helping to provide advice to public facilities in the event of a Precautionary Drinking Water Advisory (PDWA) or Emergency Boil Water Order (EBWO).

  Completion of this communications protocol was one of the recommendations of the North Battleford Commission of Inquiry directed at Saskatchewan Health. Saskatchewan Environment, Saskatchewan Health and health regions cooperated to update the protocol which is now being used by employees of both departments and the health regions.

  Precautionary Drinking Water Advisories may be issued by Saskatchewan Environment when there is a concern that problems (due to microbial or chemical contamination) may exist. Emergency Boil Water Orders are issued by Health Region officials to deal with confirmed public health threats such as microbial contamination of drinking water. Tables 5 and 6 outline statistics for Precautionary Drinking Water Advisories and Emergency Boil Water Orders issued for Saskatchewan Environment and Health Region regulated waterworks during the 2003-04 fiscal year.

Table 5: EBWO/PDWA Statistics for 2003-04 Environment Regulated Waterworks

Time	EBWO	PDWA
In Effect Prior to Reporting Period	2	49
Added During the Reporting Period	16	107
Rescinded During the Reporting Period	15	84
In Effect at End of Reporting Period	3	72

Source: Saskatchewan Environment Environmental Management System database

Table 6: EBWO/PDWA Statistics for 2003-04 Health Region Regulated Waterworks

Time	EBWO	PDWA
In Effect Prior to Reporting Period	9	7
Added During the Reporting Period	15	3
Rescinded During the Reporting Period	7	3
In Effect at End of Reporting Period	17	7

Source: Saskatchewan Environment Environmental Management System database

Tables 7 and 8 provide information regarding the reasons for Precautionary Drinking Water Advisories and Emergency Boil Water Orders issued during the 2003-04 fiscal year for waterworks regulated by Saskatchewan Environment. Further information on the nature of a Precautionary Drinking Water Advisory and Emergency Boil Water Order issued during 2003-04 by Saskatchewan Environment is available from the department.

Table 7: Reason for Issuing PDWA's during 2003-04 Environment Regulated Waterworks

Reason for issuance of PDWA	Number
Startup of waterworks	32
Lack of chlorination	9
Supply unsafe water-miscellaneous	6
Pressurization/depressurization of system	12
Source deterioration	1
Positive bacti results	11
Lack of minimum treatment	11
Positive E. coli results	4
High turbidity	20
Contamination of clear well	1
TOTAL	**107**

Source: Saskatchewan Environment Environmental Management System database

Table 8: Reason for Issuing EBWO's Health Region Regulated Waterworks

Reasons for issuance of EBWO during 2003-04	Number
Positive E. coli results	10
Positive fecal coliform results	4
Miscellaneous-unsafe drinking water	2
TOTAL	**16**

Source: Saskatchewan Environment Environmental Management System databas

- Finalize and implement a formal compliance and enforcement framework. [2003-04 planned result - Environment]

  A Drinking Water and Wastewater Enforcement Protocol was finalized and implemented. The protocol provides direction and guidance for Environmental Protection Officers to ensure effective and uniform enforcement and compliance practices are followed in dealing with non-compliance for drinking water and wastewater related violations. Ensuring public health, safety and protection of the environment is the overall purpose. The enforcement protocol requires that compliance be obtained through the use of public education and prevention while enforcement is a tool of last resort. Waterworks related infractions encountered during the reporting period are summarized in Table 9.

Table 9: Enforcement Type Summary

Enforcement Types	Waterworks Related Infractions
Written	45
Verbal	3,534
PDWA	107
EBWO	16
Total	**3,702**

Source: Saskatchewan Environment Environmental Management System database

Enforcement actions are to be applied only when voluntary compliance cannot be achieved through the continued use of public education and prevention. They will also be applied when the non-compliance issue is causing, or may cause a significant risk to public health and safety, or the environment, therefore warranting immediate enforcement action. Any prosecutions applied to Saskatchewan Environment regulated waterworks will be listed on the SaskH2O Website once final. Listed below are other enforcement actions delivered by Environment staff during the report period:

Verbal Warnings

Verbal warnings are issued for minor offences encountered during inspection duties. Verbal warnings are also documented on inspection forms used by inspection staff. A total of 3534 verbal warning were issued for minor infractions such as record keeping issues.

Written Warnings

Written warnings consist of letters of non-compliance and notices of violation. Written warnings are issued for non-compliance detected during inspections or when follow-up requirements identified through previous inspections or correspondence were not complied with. During 2003-04, 29 written warnings were issued to waterworks or sewage works owners. There were 45 infractions documented on the written warnings. Table 10 provides a breakdown of the infraction details.

Typically, the waterworks owners address all verbal and written warnings in a short time period. Department staff follow-up by repeat contacts or inspections to ensure warnings are addressed and protection of water quality is assured.

Table 10: Infraction Type Summary

Infraction Type	Number
Fail to submit a quality control/quality assurance policy	5
Fail to report an upset condition	2
Fail to monitor daily chlorine residuals	2
Fail to keep proper records	6
Fail to submit regular bacteriological samples	6
Fail to maintain minimum chlorine residuals in distribution system	5
Fail to perform monthly review of records	3
Fail to supply annual notice to consumers	5
Fail to disinfect by chlorination	4
Unlawful sewage discharge	3
Fail to report sewage discharge	3
Fail to have water meter	1
TOTAL	**45**

Source: Saskatchewan Environment Environmental Management System database

Waterworks Protection Orders

Waterworks Protection Orders are issued to a person responsible for a waterworks, if in the opinion of the Minister, it is necessary to do so to protect human health or the environment. Based on the Saskatchewan Environment's Enforcement and Compliance Framework, the department will always pursue prosecution when a Waterworks Protection Order is not complied with. Three Waterworks Protection Orders were issued during the reporting period. All three were issued to waterworks owners who failed to cause continuous disinfection by chlorination. Saskatchewan Environment follows up on all waterworks protection orders to ensure that problems are ultimately resolved.

- Develop and implement a sewage works inspection and management protocol. [2003-04 planned result - Environment]

Developed a sewage works inspection protocol that outlines the elements of wastewater works inspections and defines how inspection information is collected. Wastewater works inspections are to be conducted on an annual basis for all Saskatchewan Environment regulated sewage works. Inspection results will be stored on the Environmental Management System and inspection reports will be available to the public by means of the SaskH2O Website in the future. The protocol establishes that one inspection of each wastewater treatment system will be conducted each fiscal year commencing in the 2004-05 fiscal year.

Measurement Results

Number of accredited drinking water testing laboratories.

March 2002	March 2003	March 2004	Annual Change
1	2	4	↑2

Source: Standards Council of Canada web (http://www.scc.ca/en/news_events/notices/lab.shtml)

Laboratory accreditation indicates that the laboratory has a quality system that is documented, communicated, understood, implemented and incorporates adequate review, audit and internal quality control and ensures accurate analytical results. Laboratory accreditation is therefore important in ensuring safe drinking water for Saskatchewan residents. Effective March 31, 2004, laboratory accreditation is a regulatory requirement for waterworks performing analysis of drinking water. As of March 31, 2004, four laboratories located in Saskatchewan that perform analysis of drinking water samples have been accredited by the Standards Council of Canada. Accredited laboratories include: Saskatchewan Health Provincial Laboratory, Saskatchewan Research Council, Enviro-test Laboratories and BDS Laboratories. As of March 31, 2004, two other laboratories, (Buffalo Pound Filtration Plant and the City of Saskatoon Laboratory) were awaiting confirmation of accreditation after submitting the required documentation and having undergone the accreditation inspection process. These laboratories are seeking accreditation because they analyze drinking water samples and therefore must be accredited. This represents a significant improvement in laboratory accreditation in Saskatchewan since March 31, 2003 when two water laboratories were accredited.

Objective 2: Professional regulatory staff have access to the tools necessary to ensure compliance

Provision of safe drinking water is reliant in part on the training and tools that regulatory staff can access. The tools take the form of working agreements, computerized information systems as well as examples, guidelines and templates needed to deliver programming. Staff qualifications must also be assured and kept current with new or evolving water management processes. Collectively, these tools help to ensure that drinking water is safe and that wastewater effluent discharges do not threaten the quality of source waters or adversely impact the environment.

During 2003-04, significant progress was made in advancing this objective. A new data management system was implemented and Saskatchewan Environment staff received training on its use. Integration between Saskatchewan Environment and Medical Health Officers was strengthened by information exchange meetings and by protocol revisions. Measures to detect waterborne disease outbreaks were implemented in conjunction with pharmacists.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Strengthen integration between Environment and Medical Health Officers by completing protocols on communicable disease response and information exchange on provincially regulated systems. [2003-04 planned result - Health and Environment]

  Provided updates to Health Regions on the status of regulated waterworks by means of meetings between Eco-region and Health Region staff. Saskatchewan Environment and Saskatchewan Health also met to address drinking water quality standards and policies, and worked with representatives from the health regions to update the protocol for follow-up of bacteriological water quality problems at waterworks regulated by Saskatchewan Environment.

  During 2002-03 and 2003-04, in response to the North Battleford Inquiry Report, Saskatchewan Health and the health regions made several changes to communicable disease investigation procedures contained in or associated with the Communicable Disease Control Manual. A new enteric disease investigation form was developed to include more questions about drinking water being a possible source of infection. Another change involved the inclusion of a Saskatchewan Environment official on the Health Region Disease Outbreak Investigation Team when a municipal water supply is suspected as the source of the outbreak.

- Develop emergency response protocol templates to aid owners of regulated waterworks in dealing with incidents of significant scale or impact. [2003-04 planned result - Environment]

  Developed and distributed guidelines and templates for Quality Assurance and Quality Control (QA/QC), including material for emergency response planning for waterworks. Saskatchewan Environment also developed and delivered three workshops on QA/QC and emergency response planning to aid waterworks owners complete the required planning processes. Copies of the QA/QC and emergency response planning guidelines and templates are available on the Internet (http://www.SaskH2O.ca/foroperators). Saskatchewan Environment will be pursuing completion of planning requirements by waterworks owners during the 2004-05 fiscal year.

- Complete a review to determine the effectiveness of sentinel pharmacies for tracking anti-diarrhea drugs as a possible indicator of a disease outbreak. [2003-04 planned result - Health]

  Saskatchewan Health's Chief Medical Health Officer has written to the Saskatchewan Pharmaceutical Association asking them to request Saskatchewan pharmacists to notify the local medical health officer of any unusual increase of purchases of anti-diarrheal medications. The letter also indicated that local medical health officers may contact pharmacists when investigating water borne illness outbreaks to obtain this type of information. This activity was completed in 2003-04.

- Provide formal training in waterworks inspection and enforcement for Saskatchewan Environment staff. [2003-04 planned result - Environment]

  Established training requirements and programming to ensure that persons inspecting waterworks are knowledgeable in water treatment best industry practices. Environmental Project Officers must have as a minimum educational background a two-year diploma in a water related curriculum.

  In-house training consisted of a technical component (examination required), which would be the equivalent of Water Treatment Level 2 (WT2). Enforcement and Compliance training (examination required) and training on regulations and guidelines was also provided to all Environmental Project Officers. Waterworks inspectors began acquiring the 0.5 Continuing Education Unit (CEU) (or one CEU every two years), exactly the same as the certification program which waterworks operators must acquire.

- Ongoing development of the Environmental Management System to support drinking water management, compliance activities and handle ever increasing demand for data and information. [2003-04 planned result - Environment]

  Environmental Project Officers began using the Environmental Management System for drinking water quality information in June 2003. To date, 39 staff members have been trained to use the Environmental Management System as their primary drinking water information system. The system also stores other necessary information, such as waterworks inspection results, used to monitor the performance and compliance of the waterworks. It is able to alert Saskatchewan Environment staff when waterworks are no longer compliant with operational guidelines and regulation. Drinking water quality data for each community regulated by Saskatchewan Environment is available to the public through the Internet (www.SaskH2O.ca/MyDrinkingWater.asp).

Measurement Results

A measurement tool was under development.

Goal 3 - High quality source waters are protected now and into the future

Objective 1: Risks to source water quality are known

Protection of source water quality is a component of the provision of safe drinking water. Identification of risks to source water quality is the first step in developing actions and strategies to protect them and minimizing the cost to treat drinking water.

During 2003-04, significant progress was made in advancing this objective. Watershed planning was initiated for seven watersheds in the province. Monitoring of surface waters was conducted to support development of the Water Quality Index, a comprehensive indicator of water quality. There were 311 inspections of sewage works performed to identify risks to source waters.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Determine risks of wastewater effluent, intensive livestock operations, resort villages, recreational subdivisions, forestry activity, industrial activity and other developments in order to develop a well-understood set of risks to source water quality. [2003-04 planned results Saskatchewan Watershed Authority]

  The Watershed Planning Model was publicly announced in 2003. Development of source water protection plans by the Authority were then initiated through the formation of advisory and technical committees in the Lower Souris, Upper Assiniboine, Moose Jaw, Upper Qu'Appelle, South Saskatchewan and North Saskatchewan watersheds and the Yorkton aquifer as a means to identify risks to watersheds.

  Saskatchewan Agriculture, Food and Rural Revitalization requires intensive livestock operations to develop waste storage and management plans that will not contaminate water resources. In 2003-04, 31 approvals were issued for intensive beef, dairy, pork and chicken operations. Some of the approvals were for expansions and/or modifications to existing operations.

- Advance a ground water mapping program to allow identification of risks to quantity and water quality. [2003-04 planned results Saskatchewan Watershed Authority]

  Continued a ground water mapping program, in conjunction with the Saskatchewan Research Council, to assess risks to water quantity and quality. Work to delineate ground water resources in agricultural Saskatchewan began starting with the Rural Municipality of Piapot to assess the groundwater resources. The Regina groundwater mapping activities were completed with work on the Saskatoon map sheets initiated.

- Ensure that water supply allocation is performed so that water supplies are sustainable. [2003-04 planned result Saskatchewan Watershed Authority]

  Saskatchewan Watershed Authority must approve all non-domestic water use in the province. Through the approval process, the Authority ensures that water use is undertaken on a sustainable basis. For surface water projects, the historical climate variability is taken into account in determining sustainable water supplies. The Authority also monitors surface water levels and flows in partnership with the Water Survey of Canada. The Authority also partners with the Saskatchewan Research Council on the provincial groundwater-monitoring network. Further, water level monitoring is a standard condition on groundwater approvals. Together, these monitoring activities are an important component in ensuring that water development is proceeding in a sustainable manner. Table 11 outlines the permits and approvals issued for water allocations and water rights.

Table 11: Permits/approvals issued for water allocations and water rights

Permit/Approvals during 2003-04	Surface Water	Ground Water
Approval to construct works issued	55	8
Water Rights issued	86	156
Approvals authorizing private domestic dams	200	N/A
Temporary water use permits	1905	N/A
Groundwater investigation permits issued	N/A	44

Source: Saskatchewan Watershed Authority file information

- Conduct monitoring of surface waters to determine quality trends and impacts on an on-going basis. [2003-04 planned result - Environment and Saskatchewan Watershed Authority]

  Monitoring of surface waters continued and was focused on a network of locations across the province which were selected to provide information on quality trends and impacts and is helpful in guiding source water quality and environmental protection efforts. Information generated by water quality monitoring is used to evaluate water quality and supports the determination of the Saskatchewan Water Quality Index. During 2004-05, a new water quality monitoring program will be developed for key indicators of watershed and aquifer health. The Surface Water Quality Objectives will also be updated to reflect current conditions and scientific information.

- Develop a Water Quality Index as a comprehensive water quality indicator. [2003-04 planned result - Environment and Saskatchewan Watershed Authority]

  Saskatchewan Environment and the Saskatchewan Watershed Authority have developed and now employ the Saskatchewan Water Quality Index as a comprehensive water quality indicator. At this time, the index allows evaluation of water quality in four categories or uses:
  - Protection of Aquatic Life: uses a wide range of parameters necessary to support fish, insect and plant life;
  - Irrigation: parameters that can adversely affect irrigated crops;
  - Livestock Watering: includes parameters that can affect livestock growth and well being; and
  - Recreation: evaluates the bacterial and aesthetic quality parameters of the water.

  The index provides a simple numerical value which indicates the quality of surface water for the intended use. Numerical values indicating water quality range from 0 to 100 with values of 100 representing excellent quality and values of less than 44 being poor. The Saskatchewan Water Quality Index has been revised and applied to some of our major waterbodies by the end of the 2003-04 fiscal year (South Saskatchewan, North Saskatchewan, Qu'Appelle and the Moose Jaw rivers). Further development and application awaits full data management capabilities of Saskatchewan Environment's new information management system.

- Perform compliance inspections at regulated sewage treatment plants and require by permit, sampling and analysis of effluent discharges. [2003-04 planned result - Environment]

  Conducted 311 inspections of wastewater treatment systems. Over the past two fiscal years, the vast majority of sewage works were inspected. Inspection of sewage works is important in ensuring that wastewaters are being properly treated and that source waters and the environment is not adversely affected. A new sewage works inspection protocol was developed during the 2003-04 fiscal year. During 2004-05, each sewage works regulated by Saskatchewan Environment will

be inspected. Sampling and analysis of sewage effluent discharges is presently required as a permit condition for sewage works governed by the department.

- Issue industrial effluent permits and tracks compliance with effluent quality requirements on an on-going basis. [2003-04 planned result - Environment]

  Saskatchewan Environment reviews industrial effluent quality information and updates the related industrial effluent permits as a means to identify and manage threats to source water quality. This is an ongoing function of the department and also serves to further the environmental protection goals of the department.

- Comments on Intensive Livestock Operations permitting as governed by Saskatchewan Agriculture, Food and Rural Revitalization on an on-going basis. [2003-04 planned result - Environment]

  Reviewed requirements for monitoring of Intensive Livestock Operations governed by Saskatchewan Agriculture, Food and Rural Revitalization under *The Agricultural Operations Act* as a means to identify and manage threats to source water quality. Large Intensive Livestock Operations are re-inspected on an audit basis, to ensure compliance with approved plans. Work with local watershed associations to identify any threats to source water quality from existing Intensive Livestock Operations was performed and will continue.

- Perform an overall assessment of the impacts and risks associated with wastewater discharge. [2003-04 planned result - Environment]

  Performed an overall assessment of information on wastewater discharge impacts and risks. Information on 526 wastewater discharges was reviewed for potential for direct or indirect impacts on source water. A number have been identified as being of potential for concern and in need of further assessment, inspection or action to resolve existing problems. Further work on the status of wastewater systems in Saskatchewan is planned for 2004-05. In particular, further work will proceed on re-inspection and assessment of wastewater works, in order to determine which wastewater systems pose the highest risk to the environment.

Measurement Results
Number of sewage effluent discharges that represent a risk to source waters.

As of March 31, 2004 approximately 93 wastewater systems have been identified as having discharge that may reach a surface waterbody under certain conditions (Source: Saskatchewan Environment Environmental Management System database). Some of these 93 systems may be a potential concern and require further assessment or action to resolve existing problems. This measure was established during 2003-04; therefore, historical trend information is not available. Further work on the status of wastewater systems in Saskatchewan is planned for 2004-05.

Objective 2: Watersheds are protected, natural purification and protection processes are maximized and potential for contamination is minimized

Protection of source waters can reduce the costs of water treatment and improve water quality while helping to maintain other water uses. Sound water resource management means that the processes which break down wastes must be protected as must land use practices which can protect water quality from contamination. Actions in terms of both organizational structure and watershed/water management are improving source water protection in the Province.

During 2003-04, significant progress was made in advancing this objective. Saskatchewan Environment now serves as "Champion" of a federal-provincial initiative to improve management of municipal wastewater. A stewardship approach to reduce impacts due to grazing practices was implemented to improve riparian and wetland health/condition at 1,222 sites. Stewardship agreements with 42 landowners to conserve 207,645 hectares of native prairie were reached. "Environmental farm planning" as part of the Federal/Provincial Agriculture Policy Framework is now being implemented to identify environmental risks, including risks to water resources.

Key Results

The key actions originally planned for 2003-04 are shown below, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Ensure that legislation and regulations administered by the Authority are effective in protecting watersheds. [2003-04 planned result - Saskatchewan Watershed Authority]

  Completed an internal review of the legislation and regulations of the Saskatchewan Watershed Authority. The review aims to examine and address the adequacy of the inherited acts and regulations. The review identified how the current legislative framework supports the Authority's mandate and reviewed issues that require enhancement or amendment. Legislation administered by other departments, such as *The Environmental Management and Protection Act, 2002* administered by Saskatchewan Environment and *The Agricultural Operations Act* administered by Saskatchewan Agriculture, Food and Rural Revitalization complement and strengthen watershed protection in Saskatchewan. As of the date of this report, recommended changes to legislation is awaiting consideration by executive and will be reported on next year.

- Participate in federal/provincial municipal wastewater initiatives. [2003-04 planned result - Environment]

  Certain constituents of Municipal Wastewater Effluents have been identified by Environment Canada as "Toxic Substances" and subject to *The Canadian Environmental Management and Protection Act*. As a means to harmonize the management of Municipal Wastewater Effluents and attain compliance with federal requirements for the management of ammonia and chlorine residual within municipal wastewaters, Saskatchewan Environment is now championing a federal-provincial-territorial process to improve wastewater management across Canada. This work is being undertaken through the Canadian Council of Ministers of the Environment and will be completed by December 2006.

- Watershed Planning activities are supported and provides a basis for decisions. [2003-04 planned result - Saskatchewan Watershed Authority]

  An assessment has been initiated to re-evaluate and re-design the Prairie Water Care program and the Rural Water Quality Advisory Program to provide monitoring and assessment support for the seven-priority watershed planning processes and priority operational projects (structures, fish passages). This assessment has been initiated to ensure that existing programming supports watershed based activities.

  Saskatchewan Agriculture, Food and Rural Revitalization works with the Saskatchewan Watershed Authority as members of Watershed Planning Technical Committees working on the development of Watershed Planning to protect watersheds and minimize potential impacts to water resources.

  The Minister of Saskatchewan Agriculture, Food and Rural Revitalization, established the Spirit Creek Watershed Monitoring Committee to provide independent monitoring of water resources in the Spirit Creek Watershed basin. The committee, with technical assistance from Saskatchewan Agriculture, Food and Rural Revitalization, Saskatchewan Watershed Authority and Saskatchewan Environment, has established a water monitoring program to ensure large hog barns in the Rama area of the basin are not impacting water resources. The committee also initiated a soils monitoring project to evaluate the use of manure to fertilize crop production in the area and to determine if soil nutrientloading is occurring in the root zone and/or below the root zone.

- Implement a stewardship approach to further conservation and reduce impacts due to grazing practices. [2003-04 planned result - Saskatchewan Watershed Authority]

  Assistance was provided to landowners for the implementation of the development of grazing and land-use programs to improve riparian and wetland health/condition at 1222 sites. Stewardship agreements with 42 landowners to conserve 207,645 hectares of native prairie were reached.

Saskatchewan Agriculture, Food and Rural Revitalization has cooperated with the Saskatchewan Watershed Authority in several riparian enhancement and or protection projects and in the publication of "beneficial" management practices to keep riparian areas healthy and functional.

Saskatchewan Agriculture, Food and Rural Revitalization provides funding through the Agriculture Development Fund for research and development of treatment and processing technologies that help to reduce the potential of contaminants leaving agricultural operations and lands. Research has also been funded to determine manure and nutrient application rates for crop production that will not result in losses to the environment and balances rates to crop requirements.

- Undertake consultations regarding amendments to *The Planning and Development Act, 1983* to ensure that:
  - all subdivision application approvals are issued subject to the protection of and adequate provision of quality drinking water for the residents of the development; and
  - all municipalities have in place zoning bylaws that address watershed protection plans to protect their drinking water supplies by 2007. [2003-04 planned result - Government Relations and Aboriginal Affairs]

The bylaws will be established in coordination with the implementation of the phase-in of the Saskatchewan Watershed Authority's watershed plans. Saskatchewan Government Relations and Aboriginal Affairs worked with the Authority on a number of watershed plans and coordinated with the Authority representation at stakeholder meetings to provide information on implementation of watershed planning and upcoming municipal responsibilities. Government Relations and Aboriginal Affairs also began to collect information from provincial jurisdictions regarding the approach used by municipalities to implement watershed protection policies through planning bylaws.

Other actions to enhance watershed protection and water use beyond the actions planned as part of the Safe Drinking Water Strategy include:

- Saskatchewan Agriculture, Food and Rural Revitalization is in the process of implementing "environmental farm planning" as part of the Federal/Provincial Agriculture Policy Framework. Environmental farm plans will help farmers to identify environmental risks, including risks to water resources. The framework also provides some funding for the implementation of practices that reduce or minimize some of the risks identified.
- Saskatchewan Agriculture, Food and Rural Revitalization administers *The Irrigation Act* and legislative changes are under consideration. The legislation ensures soils are appropriate for irrigation. Appropriate application rates are evaluated and off site impacts are considered for both surface runoff and groundwater flow.

Measurement Results

Water Quality Index (WQI) ratings for watersheds within the province.

Waterbody	Water Quality Index Rating (revised)
Qu'Appelle River*	Fair to Good
North Saskatchewan River*	Fair to Excellent
South Saskatchewan River*	Good to Excellent
Moose Jaw River**	Poor to Fair
Souris River at 18 Highway (1971-1982)	Poor to Good
Assiniboine River at Highway 8 South (1972-2002)	Poor to Excellent
Assiniboine River at Old Highway 8 (1985-2002)	Marginal to Good
Churchill River at Otter Rapids (1972-1982)	Good to Excellent

*15-year average. ** 12-year average

Source: Saskatchewan Environment and Saskatchewan Watershed Authority monitoring results

The revised Saskatchewan Water Quality Index has been applied to sites across four major waterbodies by the end of the 2003-04 fiscal year (South Saskatchewan, North Saskatchewan, Qu'Appelle and Moose Jaw rivers). Index values for these waterbodies were recalculated based on a new set of parameters that are important to a range of water uses. Since the manner in which the Saskatchewan Water Quality Index is determined was revised late in 2003-04 the results noted above are not comparable with information previously reported, including information found in the 2004-05 performance plan. The baseline data above will serve as the starting point for gauging future results. Saskatchewan Environment plans to revise its surface water quality objectives during 2004-05. Further development and application of the water quality index awaits full data management capabilities of Saskatchewan Environment's new information management system.

Measurement Results

Number of municipalities with bylaws in place to protect their drinking water supplies.

This measure was established to gauge compliance with legislative amendments that are planned for 2006 that would require municipalities to put in place bylaws to protect their drinking water supplies. Since the measure is aimed at a future event, we are unable to report results for the 2003-04 fiscal year and provide trend information for this measure. As of December 2003, 18 per cent of the urban and rural municipalities have some form of water management policy contained in their community planning bylaws. Of this percentage, 11 per cent of the municipalities have mandatory provisions protecting water, whereas 7 per cent have permissive or discretionary provisions (Source: Government Relations and Aboriginal Affairs manual filing system on municipal bylaws). These values will serve as the baseline for reporting future year results.

Goal 4 - Citizens and consumers trust and value their drinking water and the operations which produce it

Objective 1: Consumers value quality water and are willing to pay for it

Saskatchewan residents are not always aware of the cost of providing safe drinking water. Protection of source waters, the ability to treat source water and ensure sustainable supplies is dependant on consumers that recognize the value of water and are willing to pay for it at present and in the future.

Polling results show that significant progress has not been made in advancing public recognition of the value of water or willingness to pay for it. This may be related to the high level of confidence in safety of drinking water as noted for Goal 4, Objective 2. Although significant effort was expended during 2003-04 to advance this objective, further effort will be needed in the future.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Deliver a public education campaign to educate people about the costs and benefits of quality drinking water. [2003-04 planned result - Environment, Saskatchewan Watershed Authority and SaskWater]

  Saskatchewan Environment activities:

  - Produced a brochure dealing with the provincial government's drinking water strategy that coincided with the one-year anniversary of the North Battleford Inquiry into drinking water.
  - Provided an educational item for a public education brochure entitled "Supply, Quality and Use of Water in the Prairie Provinces Saskatchewan Edition". This brochure addresses a number of water quality and cost related issues in Saskatchewan. Saskatchewan

Environment has provided water related items for the Saskatchewan Government Relations and Aboriginal Affairs municipal newsletter.

- Launched the government's new SaskH2O Website. Information on the Website includes drinking water quality, effective treatment and pertinent legislation.
- Prepared a binder of information including regulations related to drinking water issues for water treatment plant operators and owners across the province. Distribution of the Drinking Water Information Binder began in March 2003. Several updates to the binder were developed and delivered during the first half of fiscal 2003-2004. The binder was made available on-line and in CD format to facilitate greater waterworks owner/operator and public access.
- Delivered 12 drinking water related workshops.
- Organized and staffed drinking water displays in the trade shows at the annual conventions of the Saskatchewan Association of Rural Municipalities and the Saskatchewan Urban Municipalities Association.
- Arranged for a television public service announcement during 2003-04 regarding hazardous waste and relation to water which is played on various television stations.
- Saskatchewan Environment produces a newsletter 'The Exchange' on a periodic basis that deals with a variety of Environmental issues including protection of drinking water. The January 2003 issue of the newsletter which was sent to all stakeholders and made available to the general public on the Saskatchewan Environment Website contained articles related to the importance of fresh water, government actions to ensure safe, high quality drinking water and improvements to the province's drinking water program.

SaskWater Activities:

- During preliminary water system assessments, SaskWater promotes the need for long-term, sustainable solutions to problems. This means water rates are based on capital and operating costs and the quality value of water relationship is emphasized (i.e. better quality water tends to cost more to produce). SaskWater undertook two preliminary water assessments for clients during the reporting period and had one of its own plants assessed by a consultant.
- Information is provided at meetings with communities that outline the economic benefits of high quality water (longer appliance life, reduced use of detergents and purchases of bottled water, etc.). SaskWater's "solutions provider" role forms part of the corporate communications strategy. This role was further highlighted in three articles and inserts (i.e. the testimonial brochure) prepared by SaskWater for the Saskatchewan Urban Municipalities Association's Urban Voice publication which is distributed to the association members. In addition, an article on SaskWater was featured in Commerce and Industry magazine in 2003 (available at http://www.saskwater.com). Finally, speaking notes and advertising emphasize water quality rather than the price of water.

Saskatchewan Watershed Authority Activities:

- Educational material provided by the Saskatchewan Watershed Authority on source water protection provides linkages and understanding on the benefits and cost implications for drinking water production and protection. The Authority implemented a public education strategy and delivered information in support of the Authority programs and our partner programs. This was achieved by surveying residents of priority watersheds; publishing the Prairie Update newsletter; coordinating Website design and content; preparing feature articles for weekly newspapers, partner and trade magazines, and participating in major tradeshows including Canadian Western Agribition, Farm Progress, Canadian Water Resources Association, Saskatchewan Urban Municipalities Association, Saskatchewan Association of Rural Municipalities and the major education conferences in the province.

Measurement Results

Per cent of survey respondents indicating that they are willing to pay more for their drinking water.

December 2001	May 2003	Change
61	61.9	↑0.9

Source: Saskatchewan Environment - Omnibus Polling Results

Based on a May 2003 Omnibus poll, 61.9 per cent of people polled are willing to pay more to improve their drinking water. This value is virtually the same as December 2001 when 61 per cent of people surveyed were willing to pay more to improve their drinking water. Breaking the results of this poll down further show that 68.5 per cent of residents Towns, Villages and Hamlets were willing to pay more, whereas 53.1 per cent of residents of Rural Municipalities were willing to pay more. The consistent polling results may be related to the high level of confidence in safety of drinking water as noted for Goal 4, Objective 2.

The results of another poll taken during January 2004 were not comparable with the May 2003 results because of an inadvertent change to the categories used to quantify [summarize] the responses from the survey respondents. Saskatchewan Environment will endeavor to ensure the use of consistent polling methods in the future.

Objective 2: Citizens and consumers trust the quality and reliability of their drinking water systems and are confident in the regulatory system

Consumer trust in drinking water and regulatory systems that govern them is vital to ensuring the long-term sustainability of waterworks. Consumers who trust the quality and reliability of their water supplies are more willing to support the production of safe drinking water in the future. Release of polling results also bolsters transparency and public trust.

Significant progress has been made on advancing this objective. Based on a May 2003 Omnibus poll, 87 per cent of people polled strongly or moderately agree that they are confident in the safety of their own drinking water, an increase of 15 per cent since December 2001.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Continue to provide technical assistance to rural residences on their drinking water through the on-going operation of the rural water quality program. [2003-04 planned result - Saskatchewan Watershed Authority]

  The rural water quality program provides technical assistance to rural clients to obtain drinking water samples of private supplies. The sample is tested for over 30 constituents and a follow-up letter is provided to the client describing the quality of the water relative to the Canadian Drinking Water Guidelines. General advice is given of what types of treatment may be required. The program handled over 350 clients during 2003-04.

- Prepare a polling strategy aimed at tracking public opinion and trust in drinking water and the associated regulatory systems. [2003-04 planned result - Environment]

  Completed a polling strategy to track public opinion and trust in drinking water and the associated regulatory systems. The strategy contains three main sources of information related to public polling on water related issues. The omnibus polling, conducted by the provincial government is used, to ask questions it believes important to performing its duties. It uses the results of the polling by GlobeScan Inc., which does regular polling of Canadian attitudes towards environmental and natural resources issues to track the department's performance in relation to other provinces. The department also from time to time conducts its own polling in Saskatchewan related to the overall performance of the department in relation to its mandate. Saskatchewan Environment plans to ensure that questions regarding public confidence in water are asked annually in an attempt to gauge any changes. This will ensure new statistics for each annual report, and also allow the department to track any changing public opinion that could require further assessment or changes in approach.

Measurement Results

Per cent of survey respondents indicating that they agree or strongly agree that they are confident that their drinking water is safe.

December 2001	May 2003	Change
72	87	↑15

Source: Saskatchewan Environment - Omnibus Polling Results

Based on a May 2003 Omnibus poll, 87 per cent of people polled strongly or moderately agree that they are confident in the safety of their own drinking water. This value represents an increase of 15 per cent since December 2001 when 72 per cent of people surveyed were very or somewhat confident in the quality of their tap water. Many actions initiated under the Strategy such as waterworks inspections, consumer notification and implementation of water quality standards contribute to public confidence in the safety of drinking water. Ongoing attention to the elements of the strategy will contribute to maintenance of the high level of public confidence in safety of drinking water in the future.

The results of another poll taken during January 2004 were not comparable with the May 2003 results because of an inadvertent change to the categories used to quantify [summarize] the responses from the survey respondents. Saskatchewan Environment will endeavor to ensure the use of consistent polling methods in the future.

Objective 3: Citizens have meaningful access to information about the quality of their water

Information on water quality is important in building public trust in water systems. Information must be understandable, current and readily accessible. To build full trust, information needs to be available both from the waterworks owner and the regulator.

Significant progress has been made in advancing this objective. The public now has access to drinking water quality information on-line (see http://www.SaskH2O.ca/MyDrinkingWater.asp). Consumer notification is now being implemented as a means to directly advise municipal water users of the quality of their drinking water.

Key Results

The key actions originally planned for 2003-04 are shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Establish regulations that will require municipalities to put in place rate and capital investment policies for their water utilities by January 1, 2005 and to publicly report on these policies by July 1, 2005. [2003-04 planned result Government Relations and Aboriginal Affairs]

  Amendments in 2002 to *The Rural Municipality Act, 1989*, *The Urban Municipality Act, 1984*, *The Northern Municipalities Act* and *The Cities Act* were passed and provide regulation making powers to require municipalities to establish and report on pricing and capital investment policies for their utilities. During 2003-04, work began on regulations that are to be completed during the 2004-05 fiscal year that will require municipalities to establish pricing and capital investment policies for their waterworks and publicly report on them and related key financial information. This information will assist ratepayers' understanding of municipal waterworks and help them determine if they are satisfied with the policies. These regulations are planned to be in effect July 1, 2006 to coordinate with the independent waterworks system assessments required under *The Water Regulations, 2002* so that municipalities can use the information from the assessments to establish and report on their pricing and capital investment policies.

- Deliver the first annual State of Drinking Water Quality Report. [2003-04 planned result - Environment]

  Publicly released the first annual State of Drinking Water Quality Report on July 29, 2003 (http://www.se.gov.sk.ca/environment/protection/water/DrinkingWaterQualityAnnualReport2002-03.pdf).

- Develop the Saskatchewan Water Information system to give citizens access to reliable information about the quality and value of their drinking water and the operations that produce it. [2003-04 planned result - Environment]

Implemented an Environmental Information Management System that provides immediate access to the performance of waterworks that are regulated by Saskatchewan Environment. Water quality information from the system is fed into a Website; http://www.SaskH2O.ca was launched in June to provide citizens with information about the quality of their drinking water. The Website provides up-to-date water quality results on a community-specific basis and is also a host to a wide variety of water related information, guidelines and web links, including copies of all information provided to waterworks owners by means of the Drinking Water Information Binder. During 2003-04, there were a total of 23,000 visits to the SaskH20 Website for an average of 90 visits per day and an average length of visit of eight minutes.

Measurement Results

Number of system owners that publicly release water quality results.

March 2002	March 2003	March 2004	Annual Change
3	118	359	↑ 241

Source: Saskatchewan Environment - Omnibus Polling Results

As of March 31, 2004, 359 (or 57 per cent) of waterworks owners publicly released water quality results to the consumers which they serve. Notification of consumers is required on an annual basis for waterworks regulated by Saskatchewan Environment. Although not all waterworks operators have yet to report to consumers, this value represents a significant increase since the development of the Strategy. Saskatchewan Environment will continue to pursue further progress on attainment of public reporting requirement during 2004-05 waterworks inspections, workshops and related educational efforts and by means of enforcement measures as appropriate.

Objective 4: Reduced consumption of water

Reduced consumption of water is important in minimizing costs and thereby properly valuing water. Water conservation is also necessary to protect water source quality and abundance, particularly in time of increased demand.

Based on the latest available information, progress is being made on advancing water consumption reduction. A reduction in water consumption of four per cent to 77.4 gallons/day per capita has been achieved over a one-year period ending March 31, 2003 (latest data).

Key Results

The key action originally planned for 2003-04 is shown below, along with the responsible partner, followed by our actual progress towards the key action and changes affecting the status of drinking water.

- Promote the use of low water use fixtures. [2003-04 planned result - SaskWater]

  The adoption of low water use fixtures and the benefits of lower costs associated with reduced consumption are emphasized during any discussion with communities. The need to manage utilities on a commercial basis is also promoted; charging realistic water rates reduces waste and helps support more sustainable water treatment systems. SaskWater also promotes the efficient use of infrastructure capacity such as community water allocations (i.e. from a regional water supply system), which will benefit by more accurately reflecting actual water usage. During the fiscal year, SaskWater made 152 contacts with municipal and industrial clients on water value and pricing.

Measurement Results

Average per capita consumption [gallons per day].

2000-01	2001-02	2002-03	Annual Change
80.3	80.7	77.4	↓ 3.3

Source: Saskatchewan Environment - Omnibus Polling Results

Data for 2003-04 is not currently available. The data source used to generate the performance results for this measure has a time lag of one year; 2003-04 data will be available in July 2005. Data for the 2002-03 fiscal year shows that a reduction of 3.3 gallons per day in the average per capita consumption of water occurred from the previous year.

Reduction of water is partly the result of promotional efforts by SaskWater as well as greater general emphasis through application of the Strategy on the value and importance of drinking water quality. Brochures will be produced during 2004-05 to encourage further reduction in water consumption. Officials will also reinforce this measure during workshops and meetings with waterworks owners by providing information on water value and pricing.

2003-04 Financial Results

The following table outlines information on the actual and budgeted expenditures relating to the Safe Drinking Water Strategy. Funding for this Strategy comes from various Government departments and agencies and is contained in their respective budgets. Variance explanations have been provided for all variances that are greater than $5,000.

(in thousands of dollars)

Department	Budget	Variance Over (Under)	Actual Expenditure
Environment	2,525	2,408	(117)[1]
Government Relations and Aboriginal Affairs	18,444	13,500	(4,944)[2]
Health			
Regional Health Services*			
- Regional Health Authorities Base Operating Funding	418	418	
- Regional Targeted Programs and Services	58	55	(3)
Provincial Laboratory - Environmental Services	330	330	
Saskatchewan Watershed Authority**			
- Operations	395	395	
- Water Control	4,805	4,805	
- Water Quality	1,646	1,646	
Total	**28,621**	**23,557**	**5,604**

*This funding which is specifically allocated to drinking water safety, is in addition to Regional Health Authority funding of Medical Health Officer, Public Health Inspectors and Public Health Nurse services related to inspection of licensed facilities, disease investigation and surveillance.

** Expenditures shown are grants from the General Revenue Fund to the Saskatchewan Watershed Authority for these programs.

Explanations of Major Variances

[1] Under expenditure due to year-end spending reductions.

[2] The 2003-04 budget provided an estimated $18.4 million for water and sewer projects under CSIP. By the end of the year, $13.5 million was spent on the projects. The full amount budgeted was not spent because some projects were delayed and have been be rolled over to the following year. Also, the actual cost of some projects came in below the estimated cost.

Under the Canada-Saskatchewan Infrastructure Program (CSIP), which is administered by Government Relations and Aboriginal Affairs, financial support is provided to municipalities and other waterworks owners for priority drinking water and wastewater infrastructure improvements. During the year, $13.5 million of federal and provincial CSIP funding was spent on 33 water and wastewater projects approved in 2003-04 and on 45 multi-year projects approved in prior years.

Where to Obtain Additional Information

Further information on the Safe Drinking Water Strategy and information contained in this report is available on the SaskH2O Website (http://www.SaskH2O.ca) and on Saskatchewan Environment's Website (http://www.se.gov.sk.ca/environment/protection/water/water.asp). Further detailed information on the status of drinking water in Saskatchewan is available from Saskatchewan Environment or at the SaskH2O Website (http://www.SaskH2O.ca/news.asp or http://www.SaskH20.ca/MyDrinkingWater.asp).

A performance plan for the Safe Drinking Water Strategy for the 2004-05 fiscal year was published on March 31, 2004 with the release of the 2004-05 provincial budget. A copy of the plan for the 2004-05 Safe Drinking Water Strategy is available on the Internet at http://www.gov.sk.ca/finance/accountability/default.htm. Next year's annual report will address both the status of drinking water and the published 2004-05 strategic plan.

Further information is also available by contacting:

Drinking Water Quality Section
Environmental Protection Branch
Saskatchewan Environment
3211 Albert Street
REGINA, SK S4S 5W6
306-787-6504

or at Saskatchewan Environment's inquiry center
toll free in Saskatchewan at 1-800-567-4224.

Feedback on the performance results may also be provided to Saskatchewan Environment through the contact information immediately above.

An electronic copy of this report is available on the Internet (http://www.SaskH2O.ca/news.asp).

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